

Communication Equipment Catalog

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From Yaesu!



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FT-50R



FT-900CAT



FT-1000MP



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Maps Pages: 114, 115 • Index Page: 116

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Looking for what's new in Amateur Radio?

LOOK TO ALINCO!

COOL NEW PRODUCTS THAT ARE FUN, AFFORDABLE AND DEPENDABLE.



■ **DJ-S41T** A full-featured 70 cm HT for less than \$150! Pivot antenna and rugged design make it ideal for pocket or purse. Uses 3 AA batteries, has 21 memories, CTCSS, many programmable features and a great line of accessories.

Work repeaters, simplex or cross-band links, there's no end to the fun!

■ **DR-605T**

Who said a full-featured, dual band mobile has to be expensive? 100 memories, CTCSS + European Tone Bursts, cross-band repeat, built-in duplexer, MARS/CAP capability, 9600 packet port, clone function and more at a very affordable price! Easy to operate, clean design. Perfect companion to the DJ-S41T (above).



■ **DR-140T** Alinco's newest 2 meter mobile, packed with features at a very low price! Alphanumeric display (up to 7 characters), 51 memory channels, CTCSS + European tone bursts, scanning functions, cloning capability, MARS/CAP capability and more, with dependable Alinco quality.



■ **DM-1350 Regulated DC Power supply**

Power your radios, accessories (including laptop computer or cellular phone), or test bench with a versatile performer. Three styles of output terminals: binding post, spring clip and cigar lighter port. Variable voltage output knob (1-14 VDC), forced air

cooling and short circuit protection. Meters included at no extra cost. Solid value for your station at an Alinco price!

■ **DX-70TH HF+6 Meter Transceiver with 100 watts output**

The DX-70T is already a legendary performer, now it's joined by the DX-70TH, featuring more power for 6 meter users. 100 memories, CTCSS for 6 & 10 meter FM repeaters, detachable face for remote mounting, general coverage receiver, narrow filter, speech processor, multi-function control and much more.



■ **EDX-2 Automatic antenna tuner**

Plugs directly into Alinco DX-70 radios, usable with other HF units. Matches 160 - 10 meters (minimum 40 foot wire antenna required for 160 meter use).

Perfect for mobile, base, portable or marine installations and areas where space is restricted. An outstanding value at less than \$350!



Simple ■ Clean ■ Dependable



ALINCO
ELECTRONICS INC.

THE NEW VALUE LEADER IN AMATEUR RADIOSM

ASK YOUR ALINCO DEALER ABOUT THE NEW 2 YEAR EXTENDED WARRANTY

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Specifications are subject to change without notice or obligation. Performance specifications only apply to amateur bands. Permits required for MARS/CAP use. Prices mentioned are MSRP. Dealer prices may vary

**HRO
Discount Price
\$139.95**

NEW!



DJ-S41T

440 MHz

\$149.95

Suggested List Price

This tiny communicator covers 440 MHz. Operate from your car with the optional EDH-18.

- Transceiver on 425-450 MHz
- 20 memories plus call channel hold frequency, offset, CTCSS tone.
- Less than 5" high and 2.25" wide.
- Uses 3 AA batteries or NiCad pack.
- Power out 340 mw.
- Large illuminated display.
- Antenna pivots out of the way for storage.
- Battery save function and low battery indicator.

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DJ-G1T

\$369.95

Suggested List Prices

**HRO
Discount Price
\$239.95**

**Receives
440 MHz**

**Built-in
Spectrum
Analyzer**



The DJ-G1T has a "Channel Scope" built-in so you can visually monitor band activity. It simultaneously monitors seven memories on seven bar graphs. If one or more channels becomes active, the corresponding bar graph gives apparent signal strength.

- 2m handheld transceiver with 440 MHz and AM aircraft receive.
- 80 memory channels with 5 auto-dialer memories.
- Programmable delay for autodialer.
- DSQ for private paging.
- Exceptional audio quality (True FM).
- Cross-band semi-duplex.
- CTCSS encode built-in.
- 6 scan modes.
- Odd-splits on all memory channels.
- Shows band activity in frequency domain in 5, 10, 12.5, 15, 20, 25, 30 or 50 kHz steps.

DJ-180T-HP

\$309.95

DJ-180T

\$289.95

Suggested List Prices



**HRO
Discount Prices
180T-\$169.95
180T-HP-\$199.95**

Intuitive operation, tough-as-nails construction, and great audio can be yours for an amazingly low price. This tiny, handheld offers 5 watts output. You don't need a magnifying glass to see the large 16 digit DTMF pad and illuminated LCD display.

- Two watts power output is standard. Up to 5 watts is available with optional 12 VDC battery packs.
- Automatic power-off.
- Has ten memory channels including one call channel. Upgrade to 50 with the optional EJ-14U or 200 with the optional EJ-15U.
- Preprogram odd repeater offsets.
- Memories store offset, shift, CTCSS encode, tone squelch.
- Full range speaker and crisp audio circuitry for great sound.
- Comes with a NiCd 7.2 volt 700 mAh rechargeable battery and a wall charger.
- Low battery indicator.
- Extended receive 130-173.995 MHz.

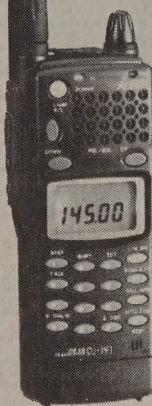
**HRO
Discount Price
\$219.95**

DJ-191T

2-Watt 2m

\$309.95

Suggested List Price



DJ-191T-HP

5-Watt 2m

\$239.95

HRO Discount Price

The "user friendly" DJ-191 has an enormous display and effortless entry. Simple operation, "slim line" technology, and durability make this a choice radio.

- Wide band receiver 135-173.995 MHz.
- Illuminated LCD display.
- Includes CTCSS encoder, DTMF squelch encoder and decoder.
- 1.5 watts output with standard battery. 5 watts output with 9.6 VDC or optional EBP-36N battery.
- 40 memory channels plus call channel store frequency, offset, shift direction, tone information, power level, DSQ setting.
- 9 auto dialer memory channels with redial.
- Seven channel steps: 5, 10, 12.5, 15, 20, 25 and 30 kHz.
- Cloning capability.
- Automatic power off.

DJ-F1T-HP

5-Watt 2m

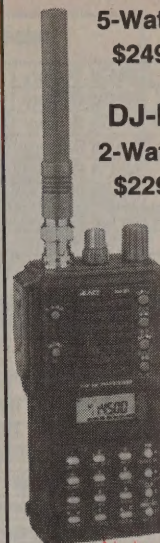
\$249.95

DJ-F1T

2-Watt 2m

\$229.95

Suggested List Prices



**HRO
Discount Prices
F1T-HP-\$209.95
F1T-\$189.95**

These tiny handhelds offer reliability and performance that is the best in their class. A unique battery design allows for a full size keypad and a large speaker packaged in a cast aluminum frame and poly-plastic case. Choose the 2- or 5-watt model.

- Wide band receiver 135-170 MHz (AM 118-136 MHz with mod).
- Digital frequency display and memory function.
- Pager and DTMF code squelch.
- DJ-F1T-TH: 5 watts output. DJ-F1T: 2 watts.
- 40 memory channels store frequency, shift, split, tone information, offset, DSQ setting.
- 8 scan modes, dual watch and priority.
- Six channel steps: 5, 10, 12.5, 15, 20 & 25 kHz.
- Programmable VFO range function.

Alinco Handheld Accessories

	DESCRIPTION	F1T	F1T-HP	G1T	162TD	162T	180T 180T-HP	191T 191T-HP	560TA	S41	580T	HRO Price
EBP-10NA	Ni-Cd Battery (7.2V 700 mAh)				*	std			std			\$45.95
EBP-12NA	Ni-Cd Battery (12V 700 mAh)				*	*			*			\$61.95
EBP-16N	Ni-Cd Battery (7.2V 700 mAh)	std	*									\$47.95
EBP-18N	Ni-Cd Battery (12V 600 mAh)	*	std									\$74.95
EBP-20N	Ni-Cd Battery (7.2V 700 mAh)										std	\$47.95
EBP-22N	Ni-Cd Battery (12V 700 mAh)										*	\$70.95
EBP-24N	Ni-Cd Battery (7.2V 1200 mAh)						*					\$78.95
EBP-26N	Ni-Cd Battery (7.2V 700 mAh)						std					\$41.95
EBP-28N	Ni-Cd Battery (12V 700 mAh)						*					\$68.95
EBP-30N	Ni-Cd Battery (7.2V 700 mAh)			*								\$50.95
EBP-31N	Ni-Cd Battery (7.2V 1200 mAh)			*								\$79.95
EBP-32N	Ni-Cd Battery (12V 700 mAh)			*								\$95.95
EBP-33N	Ni-Cd Battery (4.8V 650 mAh)							*				\$63.95
EBP-34N	Ni-Cd Battery (4.8V 1200 mAh)							*				\$82.95
EBP-35N	Ni-Cd Battery (7.2V 900 mAh)							*				\$95.95
EBP-36N	Ni-Cd Battery (9.6V 650 mAh)							*				\$67.95
EBP-37N	Ni-Cd Battery (4.8V 700 mAh)							*				\$34.95
EBC-6	Mobile Bracket			*			*	*		*		\$22.95
EDC8B	Mobile DC power cable with filter			*				*			*	\$21.95
EDC-16	Cigarette Lighter Cable/Charger				*	*			*			\$12.95
EDC-21	AC Battery Charger ENP-10				*	std			std			\$18.95
EDC-22	AC Battery Charger EBP-12N				*	*			*			\$22.95
EDC-24	AC Battery Charger EBP-20N	std	std				std				std	\$24.95
EDC-26	Cigarette Lighter Cable/Charger				*	*			*			\$17.95
EDC-37	13.8 volt power cable			*				*			*	\$7.95
EDC-43	Cigarette Lighter Cable										*	\$8.95
EDC-45	Quick Charger	*	*		*	*	*		*		*	\$99.95
EDC-49	Wall Charger						*				*	\$23.95
EDC-52	Quick Charger (EBP-30N/31N/32N)			*								\$109.95
EDC-55	Wall Charger (EBP-30N/31N/32N)			*								\$23.95
EDC-60	Rapid Charger							*				\$94.95
EDC-63	Wall Charger							*				\$24.95
EDH-1	Dry Cell Battery Case				std	*			*			\$14.95
EDH-5	AA Dry Cell Case	*	*									\$14.95
EDH-6	Dry Cell Case										*	\$19.95
EDH-11	Dry Cell Case						*					\$10.95
EDH-12	DC Jack Adaptor for ext pwr						*					\$10.95
EDH-14	Dry Cell Case			*								\$15.95
EDH-16	Dry Cell Case							*		*		\$10.95
EJ-6U	Tone Squelch Unit				*	*						\$42.95
EJ-12U	Tone Squelch Unit	*	*									\$51.95
EJ-14U	50 Memory Channel Unit						*					\$21.95
EJ-15U	200 Memory Channel Unit						*					\$29.95
EJ-16U	Tone Squelch Unit			*								\$57.95
EJ-28U	CTCSS Decoder Unit							*				\$42.95
EME-4	Ear/microphone w/PTT			*							*	\$34.95
EME-6	Earphone			*				*			*	\$11.95
EMS-2Z	Speaker Microphone				*	*			*			\$44.95
EMS-8Z	Remote Control Speaker Mic	*	*	*							*	\$48.95
EMS-9	Speaker Microphone			*			*	*		*		\$44.95
EME-10	Headset with VOX	*	*		*	*			*		*	\$69.95
EME-11	Earphone Mic with PTT	*	*								*	\$52.95
EME-12	Headset w/ear hook VOX & PTT			*			*	*		*		\$70.95
EME-13	Headset with VOX			*			*	*		*		\$70.95
EME-15	Tie pin microphone						*					\$55.95
ESC-10	Leatherette Case for EBP-10				*	*						\$21.95
ESC-11	Leatherette Case for EBP-10								*			\$21.95
ESC-17	Leatherette Case										*	\$14.95
ESC-18	Leatherette Case EBP-24N						*					\$14.95
ESC-19	Leatherette Case EBP-28N						*					\$16.95
ESC-23	Soft Case (EBP-30N)			*								\$21.95
ESC-24	Soft Case (EBP-31N/32N)			*			*					\$10.95
ESC-28	Soft Case (EBP-37N)							*				\$10.95
ESC-29	Soft Case (EBP-33N)							*				\$10.95
ESC-30	Soft Case (EBP-34N/35N/36N)							*				\$10.95

Dual-band Handhelds



**HRO
Discount Price
\$379.95**

DJ-G5TH

\$460.05
Suggested List Price

Here's a mini-sized, rugged dual band rig that is loaded with features.

- 5 watts output on both VHF and UHF with 13.8 VDC.
- Built-in CTCSS encoder / decoder.
- Full-duplex, cross-band repeater capability.
- 80 memory channels.
- Channel scope.
- Auto dialer with up to 20 memories.
- Receives FM 108-173.995 & 420-470 MHz. Receives AM on 108-173.995 MHz.
- Airband receive with no modification.
- Band scan, programmed scan or memory scan.
- Cloning function.
- Tone burst function.
- Low battery indicator, automatic power off, and time out timer (TOT).



**HRO
Discount Price
\$319.95**

DJ-582T

\$404.95
Suggested List Price

This tiny handheld for 2 m and 440 MHz is user-friendly and easy to operate.

- Receives 135-174 and 420-470 MHz. Receives AM 118-136 and aircraft standard.
- 2 watts output on 2m and 70 cm. 5W with optional EBP-22 battery.
- Built-in CTCSS encoder / decoder.
- Full-duplex, cross-band repeater capability.
- 40 memory channels (any combination VHF / UHF).
- Separate volume and squelch for each band.
- Back-lit keypad and bright red TX LED.
- Easily modified for MARS and CAP operation (proper license required).
- Big, bold keypad buttons and easy-to-grasp control knobs.
- Accelerated scan speed.
- LCD will display memory frequency or channel number.
- Custom molded antenna.

Alinco Handheld Specifications

Model	Type	Frequency Range	Power	Current Drain Xmit	Current Drain Rec	Power Out **	Memories	Ant Z	Mike Z	Sensitivity	Height In	Width In	Depth In	Weight lbs
DJ-G1T	Handheld	2 m	13.8 VDC	1.5 A	120 mA	5 W	80	50 Ω	2k Ω	<15 μV at 12 dB	4.5	1.9	1.4	0.79
DJ-G5TH	Handheld	2m / 440 MHz	13.8 VDC	1.4 A	85 mA	5 W	80	50 Ω	2k Ω	<16 μV at 12 dB	5.4	2.24	1.1	0.77
DJ-180T	Handheld	2 m	13.8 VDC	1.05 A	130 mA	2 - 5 W	10†	50 Ω	2k Ω	<15 μV at 12 dB	5.2	2.3	1.3	0.77
DJ-180T-HP	Handheld	2 m	13.8 VDC	1.05 A	130 mA	2 - 5 W	10†	50 Ω	2k Ω	<15 μV at 12 dB	5.2	2.3	1.3	0.77
DJ-191T	Handheld	2 m	13.8 VDC	1.5 A	24 mA	1.5 - 5 W	40	50 Ω	2k Ω	<16 μV at 12 dB	6	2.25	1.08	0.66
DJ-191T-HP	Handheld	2 m	13.8 VDC	1.5 A	24 mA	1.5 - 5 W	40	50 Ω	2k Ω	<16 μV at 12 dB	6	2.25	1.08	0.66
DJ-F1T-TH	Handheld	2 m	13.8 VDC	1.4 A	130 mA	5 W	40	50 Ω	2k Ω	<15 μV at 12 dB	4.3	2.1	1.5	0.83
DJ-S41T	Handheld	425-449.995 MHz	4.5 VDC	250 mA	33 mA	340 mW	20	50 Ω	2k Ω	<15 μV at 12 dB	3.93	2.16	1.1	0.41
DJ-582T	Handheld	2m / 440 MHz	13.8 VDC	1.5 A	120 mA	5 W / 5 W	40	50 Ω	2k Ω	<15 μV at 12 dB	6.65	2.24	1.23	0.97

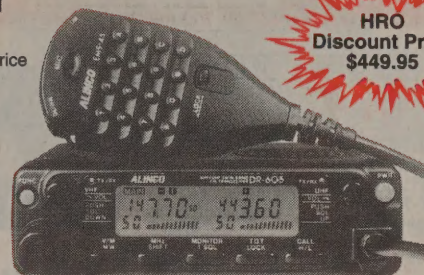
† Optional upgrades to 50 or 100 memories. ** Power output is determined by choice of battery pack.

Dual-band Mobiles

DR-605T

\$512.95
Suggested List Price

NEW!



**HRO
Discount Price
\$449.95**

Alinco's newest dual-band is a 2m / 70 cm transceiver.

- 50 watts VHF and 35 watts UHF.
- Built-in duplexer.
- Built-in CTCSS tone encoder. Decoder is optional.
- Extended Receive Range: 136-174 MHz (including AM) and 420-470 MHz.
- Channelized display.

- 9600 BPS ready.
- Cross band repeater function.
- Band, programmed, or memory scan.
- Crossband memory
- 50 memory channels per band memories plus call channel.
- Tone scan with optional EJ-24U CTCSS unit.
- Memory channel skip.
- Tone burst function (1450, 1750, 2100 Hz)



DR-610T

\$599.95

HRO Discount Price

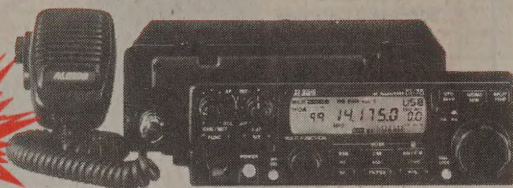
The 2m / 70 cm DR-610T is ideal for mobile or base station operation. Mount the front panel away from the radio if you wish.

- 50 watts VHF / 35 UHF.
- Built-in duplexer.
- Built-in CTCSS tone encoder. Decoder is optional.
- Two VFO's.
- Extended Receive Range: 108-174 MHz (including AM) and 420-470 MHz.
- Airband receive standard.
- Band, programmed, or memory scan.
- 5 channel auto dialer.

- 120 memories plus split channel, call channel and program scan memory. Expandable memory: order the optional EJ-23U (120 more memory channels).
- 9600 bps ready with built-in I/O jack.
- Expanded UHF TX frequencies (438-449.995 MHz).
- Channel scope.
- Cross band repeater function.

HF Transceiver

**HRO
Discount Prices**
 DX-70T: \$829.95
 DX-70TH:
 \$969.95



DX-70T

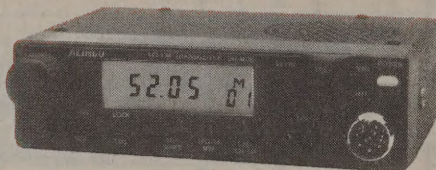
DX-70TH

Alinco's mobile HF transceiver covers the HF ham bands plus 6 meters in a package the size of most VHF mobile transceivers.

DX-70T provides 100W output from 1.8-30 MHz and 10 watts on 6 meters. DX-70TH has 100W on 6m. The detachable control head aids mobile installation. It has full QSK for CW operation. The 100 memory channels, built-in RF preamplifier, noise blanker and dual VFO are standard features.

6-Meter Mobile

**HRO
Discount Price**
 \$299.95



DR-M06T \$381.95 Suggested List Price

This 6-meter FM transceiver provides 10 watts output. It has many of the features of the popular DR-130T.

- Frequency range 50 to 54 MHz.
- 5, 10, 12.5, 15, 20 and 25 MHz tuning steps.
- 100 memory channels.
- 10 watts or 1 watt power output.
- Highly visible color LCD display.
- Four scanning modes: VFO, memory, priority and programmed.
- Built-in 50 tone programmable encode and optional decoder allow restricted access operation.
- The standard mike includes UP / DOWN buttons and DTMF encoder.
- F3E (FM) modulation.
- 30 - 450 second time-out timer.

Alinco Mobile Specifications

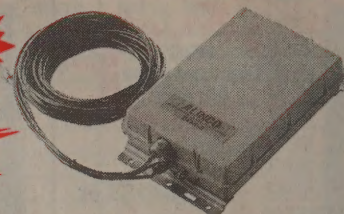
Model	Primary Use	Frequency Range	Power	Current Drain Xmit	Current Drain Rec	Power Out	Memories	Ant Z	Mike Z	Sensitivity	Height in	Width in	Depth in	Weight lbs
DR-130T	Mobile	2 m	13.8 VDC	9.5 A	500 mA	50 W	20*	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.5	6.75	2.42
DR-140T	Mobile	2 m	13.8 VDC	10.5 A	800 mA	50 W	51	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.5	6.08	1.9
DR-150T	Mobile	2 m Trans	13.8 VDC	10 A	600 mA	50 W	100	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.6	6.2	2
DR-430T	Mobile	440 MHz	13.8 VDC	9.5 A	500 mA	35 W	20*	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.5	6.75	2.42
DR-M06T	Mobile	6 m	13.8 VDC	3.0 A	600 mA	10 W	100	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.6	4.6	2.42
DR-605T	Mobile	2m/440 MHz	13.8 VDC	11.5 A	1.2 A	50 W/35 W	50	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.6	7	
DR-610T	Mobile	2m/440 MHz	13.8 VDC	11.5 A	1.2 A	50 W/35 W	120 †	50 Ω	600 Ω	<16 μ V at 12 dB	1.6	5.6	6.5	2.45

* Expand to 100 with optional EJ-19U †Expand to 240 with optional EJ-23U

Automatic Antenna Tuner

NEW!

**HRO
Discount Price**
 \$329.95



EDX-2 Automatic Antenna Tuner

\$344.95

Suggested List Price

Alinco has designed the EDX-2 automatic antenna tuner to provide a quick match between the antenna and transceiver. It has the ability to match a length of antenna from 8 feet to 80 feet on the amateur bands from 10 to 160 meters. A minimum length of 40 feet is required for 160 meters. The EDX-2 is designed to be mounted at the antenna feed point and is enclosed in a weather resistant case. It is excellent in mobile, base or marine operating environments. The EDX-2 comes equipped with a control cable interface designed to plug into the Alinco DX-70 HF station but the unit may be adapted for use with other radios. The tuner handles 200 watts PEP, requires a minimum tuning power of 7 to 20 watts and normally provides a VSWR of less than 2.0:1.

Power Supply

DM-1350 Power Supply

NEW!

**HRO
Discount Price**
 \$169.95



\$198.00

Suggested List Price

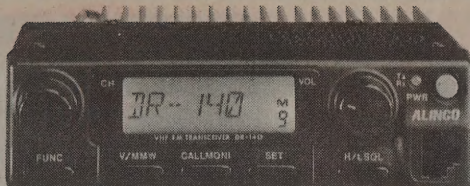
Alinco's new 35-amp power supply has dual meters. It is a completely variable DC supply with ranges from 1 to 14 VDC. It will support 30 amps continuously and has a surge capability of 35 amps with less than 30 mV peak to peak ripple. To accommodate your application, there are three different output connections. An automatic over-ampage shut-down feature protects the equipment.

NEW!

DR-140T

\$288.95

Suggested List Price



The 2 m DR-140T is versatile and packed with the most popular features. It is simple to operate, easy to program and dependable. The clean design, large controls and display make it a joy to use.

- Alphanumeric display with up to seven characters.
- 51 memory channels storing splits and CTCSS tones.
- Cable cloning.
- Aircraft band receive with automatic shift to AM.
- Channel number display
- Time out timer.
- Tone burst included.

HRO

Discount Price
\$289.95



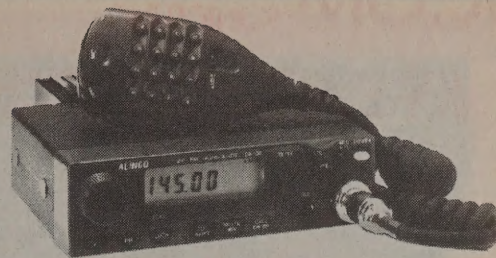
DR-150T \$336.95 Suggested List Price

Engineered for user satisfaction the 2m DR-150T features up-to-the-minute technology and a full powered 50 watts.

Enjoy the visual scanning capability of multiple frequencies along with simultaneous receive audio. While in the channel scope mode, activate the scan function and quickly access only those frequencies that show a strong signal. The "S-meter" squelch control has 8 adjustable settings for custom operation.

Alinco has designed a new Safety Dialer which allows the operator to use the autodialer by just pushing the up/down button on the mike.

- Receives 108-173.995 MHz and 440-449.995 MHz.
- Transmit 144-147.995 MHz.
- Two VFO's.
- Channel Scope (Visual Search).
- 50 watts high output, 25 watts medium, and 10 watts low.
- 100 memory channels, 1 call channel, and 1 program scan frequency memory.



HRO
Discount Prices
130T-\$229.95
130PKT-\$199.95
430T-\$329.95

DR-130T - 2m
\$314.95

DR-130PKT - 2m
Packet Only
\$214.95

DR-430T - 440 MHz
\$361.95

Suggested List Prices

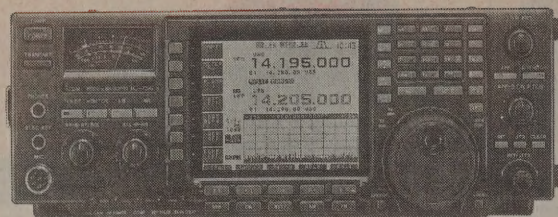
These FM mobile transceivers for 2 meters and 440 MHz condense maximum performance and operating convenience into ultra compact packages. Their impressive features provide maximum flexibility in FM mobile installations.

- 50 watts (DR-130T) and 35 watts (DR-430T) RF output with a HI / LO switch.
- Compact size and lightweight.
- Highly visible color LCD display.
- Four scanning modes: VFO, memory, programmed and priority.
- DR-130-PKT packet only. No mike or mobile bracket.
- 20 multifunction memories are fully programmable. Each channel stores operating frequency and standard offset. Expands to 100 memories with optional EJ-19U.
- Built-in programmable encode and optional decoder allow restricted access operation.
- The standard microphone (Dr-130T and DR-430T) includes UP / DOWN buttons and DTMF encoder.

Alinco Mobile Accessories

Model	Description	DR-M06	DR-130T DR-430T DR-M06T	DR-119T	DR-140T	DR-150T	DR-1200T DR-1200TH	DR-570T	DR-590T	DR-599T DR-592T	DR600T	HRO Price
EJ-7U	Tone Squelch Unit								*	*	*	\$69.95
EJ-8U	DTMF Unit								*	*	std	\$47.95
EJ-19U	Memory Expansion		*									\$28.95
EJ-20U	Tone Squelch Unit	*	*		*	*						\$41.95
EDC-19	Mounting Kit 9"10" Cable								*	*	*	\$40.95
EDC-20	Mounting Kit 16"5" Cable								*	*	*	\$46.95
EMS-3	Remote Control Microphone with DTMF						*		std	std	std	\$78.95
EMS-5	Remote Control Microphone with DTMF							std				\$63.95
EMS-10	Remote Control Microphone with DTMF			std								\$59.95
EMS-11	Remote Control Microphone with DTMF		std									\$50.95
PC-15	Power Cord (15 A)			*			*	*	*	*	*	\$10.95
PC-15B	Power Cord		*			*						\$10.95
MB-110	Mounting Bracket with Spring			*			*					\$19.95
MB-130	Mounting Bracket		*		*	*						\$19.95
MB-570	Mounting Bracket without Spring							*	*	*	*	\$19.95

† Microphone available only for the DR-1200T



IC-756 - This device has not been approved by the Federal Communications Commission. This device is not and may not be offered for sale, lease or sold or leased until the approvals of the FCC have been obtained.

NEW!

IC-756

\$TBA

Suggested List Price

**HRO
Discount Price
\$TBA**

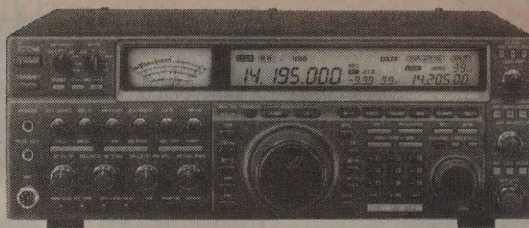
The IC-756 is a successor to the IC-736. The IC-756 is a middle class HF rig that offers many high performance features and quality usually seen only in high class, high performance rigs. It includes most of the features of the IC-736 with a number of improvements. Most significant are a new 4.9 inch multifunction LCD display, a newly designed DSP system, twin pass band tuning (PBT) and a dual watch function for monitoring multiple frequencies.

- Receive coverage from 30 kHz to 60 MHz. Transmits on amateur HF bands and 6 meters.
- All mode operation to include USB, LSB, CW, AM and FM.
- 101 memory channels, 99 regular and 2 scan edges.
- Provides 100 watts continuous output maximum on all modes except AM (40 watts maximum). Has low power adjustable to 5 watts.
- 4.9 inch multifunction LCD for displaying operating frequency, mode and filter selection.
- Spectrum scope function on the display with passband selection of ± 25 kHz, ± 50 kHz or ± 100 kHz.
- Display shows memory or memo pad list showing frequency, mode and memory name for the 10 memory channels displayed per page.
- Selectable AGC and RF attenuator.
- Display shows the contents of the CW memory keyer allowing quick response during CW operation.
- Switch labels are shown on the display to simplify radio operation.
- The new DSP design improves receive and transmit audio at the IF stage. Also provides noise reduction, automatic notch filter, PSN modulation/demodulation and selectable APT for super narrow operation.
- Twin PBT narrows the IF passband in two stages to reduce interfering signals.
- The dual watch function monitors two frequencies simultaneously.
- A high performance memory keyer has 4 memory channels, contest number auto count up and auto repeat function.
- Morse code announcement of radio functions.
- Automatic antenna tuner for HF and 6m built-in.

Ham Radio Outlet's Home Page
<http://www.hamradio.com>

**Check in for special offers,
manufacturers coupons, and
convenient ordering 24 hours a day.**

HF TRANSCEIVERS



IC-775 / DSP

\$4760.95

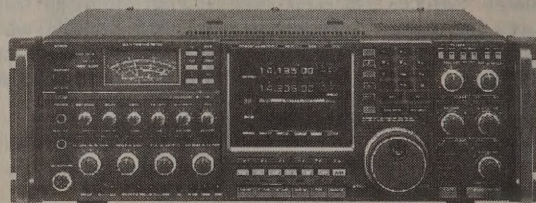
Suggested List Price

**HRO
Discount Price
\$3699.95**

The new digital IC-775 / DSP is designed especially for the serious DX'er who requires serious equipment.

This radio is fun to operate but it was engineered from the ground up using high-quality components to offer performance you will find nowhere else. Icom's new DSP technology brings you unsurpassed signal quality. Control of the signals at the modulation stage produces high quality SSB transmit signals that analog methods can not compete with. Noise reduction at the demodulation stage results in crystal clear signals. This is revolutionary DSP technology at work for the serious DX'er.

- Digital noise reduction. The DSP feature provides outstanding signal-to-noise ratio for clean receive signals.
- Digital automatic AF notch.
- Digital low-pass and high-pass filters.
- Digital ultra-narrow CW filter.
- Digital automatic audio peaking filter.
- MOS-FET finals.
- Twin passband tuning, noise blanker, and AGC.
- Direct Digital Synthesizer (DDS) for frequency stability.
- High performance general coverage receiver.
- Built-in antenna tuner.
- Built-in memory keyer and QSK function.
- Data mode for RTTY, SSTV or packet operation.



IC-781

\$8000.00

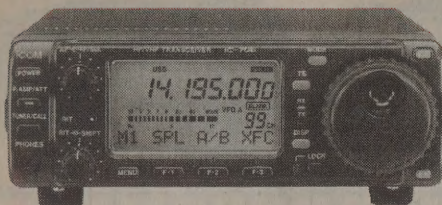
Suggested List Price

**HRO
Discount Price
\$7199.95**

The IC-781, ultimate amateur HF transceiver, is delivered complete. The only internal option available is the FL-103 wide SSB filter.

- An advanced spectrum scope analyzer with a 5-inch CRT shows status of the radio on two menu screens and 17 operational screens including displays of memory channels, sleep and daily times, built-in clocks and packet terminal monitor.
- All modes of operation: SSB, CW, RTTY, FM and AM.
- Multiple scanning modes.
- Built-in automatic antenna tuner.
- Full break-in keying.
- Multifunction keyboard controls radio operation.
- Dual Watch (dual receive). Twin bandpass tuning.
- Noise blanker, APF and notch filter.
- Band stacking registers.
- Direct Digital Synthesizer (DDS) System provides low phase noise and rapid PLL lock up time. Fast T/R switching makes this perfect for packet and AMTOR.

HF / VHF Transceiver



IC-706

\$1560.95

Suggested List Price

**HRO
Discount Price
\$1219.95**

The ultra-compact IC-706 HF/VHF all-mode transceiver features a removable control head for safe, effective mounting in even the most compact vehicles. This full-featured transceiver is equally capable of high performance in home and field applications.

The IC-706 covers all of the traditional HF bands from 160 through 10 meters as well as the popular six and two meter bands. It includes all modes over its entire frequency range, including FSK for RTTY operation, and narrow band FM on the HF bands. The receiver offers continuous coverage from 30 kHz to 2 meters with wide AM and FM broadcast reception.

Features include a 100 watt output transmitter (40 watts AM) from 160 through 6 meters, with 10 watts output on 2 meters (4 watts AM). VOX is included, as well as a speech processor, and optional narrow SSB filter. CW features include a built-in keyer, optional narrow receiver filter, full break-in (QSK), adjustable CW pitch and CW reverse functions. The **PS-85** optional switching power supply is great for making the IC-706 a base station. The **AT-180** optional automatic antenna tuner provides a 3:1 match and covers 6 meters.

101 memories are offered, with up to 9 alphanumeric characters for each memory. A dot matrix display shows all of the popular menu features, frequency and multifunction meter data. A spectrum scope displays at a glance which bands are active.

- Compact feather weight.
- Covers the HF bands plus 6 m & 2 m.
- Detachable front panel.
- Optional antenna tuner.
- Multiple CW functions.
- I-Loop PLL circuit.
- Simple spectrum scope function.
- All-mode operation including RTTY.
- 101 alphanumeric memories.
- Dot-matrix display.
- Plus more features and options.

HRO Accepts



Receivers

NEW!

IC-R10

\$TBA

Suggested List Price

The IC-R10 replaces the popular IC-R1 compact, handheld receiver. The IC-R10 covers from 500 kHz to 1300 MHz (cellular frequencies not available). It has a real time bandscope and a new "busy catch scan."

- All mode receive including CW and SSB.
- 1000 memory channels and 8 character memory names are storable for each channel.
- Multi function LCD.



IC-R10 - This device has not been approved by the Federal Communications Commission. This device is not and may not be offered for sale, lease or sold or leased until the approvals of the FCC have been obtained.

**HRO
Discount Price
\$TBA**

- Tunable bandpass filters provide good image and intermod rejection.
- Real-time bandscope makes it easy to find busy frequencies.
- The "busy catch scan" searches for the next busy frequency (FM only) while the receiver is detecting a signal.
- The Voice Scan Control pauses only for modulated signals.
- Full computer access is available from your home PC with the optional CS-R10.

NEW!

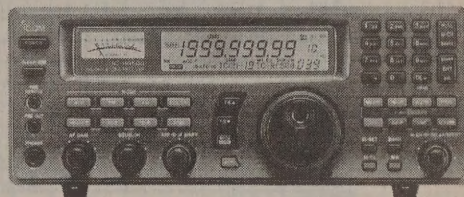
IC-R8500

\$2400.00

Suggested List Price - Call for Quote

Serious listeners will appreciate this super wide band receiver that offers the high performance of the IC-R9000 at a much lower price. Receive from 0.1 to 2000 MHz in all modes (cellular band blocked). You can be sure that if there are any communications or broadcasts out there, you'll be able to hear them with a minimum of interference with other signals.

- All modes (USB, LSB, CW, AM, FM WFM) plus CW narrow (optional FL-52A required), AM narrow and FM narrow.
- View TV signals with optional TV-R7100. Connection to CRT monitor required (not included).
- AF shift and APF built-in.



- High receive sensitivity and built-in TCXO for high stability included.
- Noise blanker, RF attenuator and selectable AGC functions.
- 1000 memory channels store frequency, mode and tuning step. Channels in 20 banks of 40 channels plus auto memory write of 100 channels and skip area of 100 channels. Alphanumeric names (8 characters) may be assigned.
- RS-232 interface, versatile scanning functions, various tuning steps, 3 antenna connectors, S-meter squelch, voice synthesizer (optional UT-102 required) sleep timer, REC and REC remote terminals for tape recorder control.



IC-R9000

\$7508.00

Suggested List Price—Call for Quotes

Notice: Federal and State Government Agencies and Communications Customers Only

Icom's top of the line receives 100 kHz to 1999.8 MHz. It receives all the following modes: LSB, USB, CW, AM, FM, WFM (wide-FM), FSK. Eleven separate bandpass filters use GaAs Fets for VHF and UHF bands.

The receiver has Icom's unique multifunctional CRT with spectrum scope to display information on the status of the radio as well as incoming signals. The CRT shows memory contents, dual clocks, weekly and daily timers, and frequency information of the dual VFO's. The display doubles as a spectrum scope showing a maximum of ± 100 kHz. Dynamic range is 60 dB and sensitivity is approximately $.63\mu V$.

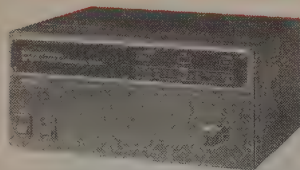
1000 memories stores mode, frequency, and tuning increments. Multiple scanning functions: program scan, memory scan, selected memory scan, selected memory mode scan, priority scan, and voice scan control. Direct keyboard entry; notch filter and IF shift.

Icom Base Station Accessories

OPTIONS		HF RADIOS														VHF / UHF RADIOS						RECEIVERS						HRO Price
		761	775	765	756	751A	738	737A	736	735	729	728	726	725	707	706	575H	275H	475H	821H	970	R9000	R71A	R72	R100	R7000	R7100	
External AC Power Supply	PS-15						*	*							*					*								\$189.95
	PS-55					*	*	*		*	*	*	1	1	*		*	*	*	*								\$259.95
	PS-30					*	*	*		*	*	*	*	*	*	*				*								\$419.95
	PS-85				*											*				*								\$299.95
Internal AC	PS-35					*																					\$239.95	
External	SP-3	*		*		1	*	*	*	*	*	*	*	*	*		*	*	*	*	*	*	1	*	*	1	*	\$99.95
	SP-7					*	*	*	*	1	*	*	1	1	*	*	1	1	1	*			*	*	*	*	*	\$75.95
	SP-10															*											\$55.95	
	SP-12															*											\$35.95	
Speakers	SP-20	1	*	1		*	*	*	*	*	*	*	*	*	*		*	*	*	*	*	1	*	*	*	*	*	\$229.95
	SP-21				*		*	*	*										*								\$99.95	
HF Linear Amplifiers	2KL	2	*	2		*	*	*	*	2	*	*	2	2	*												\$2,599.95	
	4KL	*	*	*		6	*	*	*	*	*	*	*	*	*	*											\$7,999.95	
Automatic Antenna Tuners	AH-2a			*		6					*	*															\$599.95	
	AH-3						*	*	*		7	*	*	*	*	*											\$549.95	
	AT-150					6	*	*	*	*	*	*	*	*	*												\$529.95	
	AT-160										*	*			*	*											\$299.95	
	AT-180															*											\$519.95	
Antenna Selectors	AT-500	*	*	*		*	*		*	2	*	*	2	2	*												\$999.95	
Antennas	EX-20																*										\$99.95	
	EX-627	*	*	*		6	*	*	*	*	*	*	*	*	*	*											\$359.95	
	AH-2B			*		*		*	*	*	*	*	*	*	*	*											\$269.95	
Weather Proof Preamps	AH-610																*										\$139.95	
	AG-25																	*		*	*						\$159.95	
	AG-35																		*	*	*						\$169.95	
Microphones	AG-1200																				*						\$139.95	
	HM-36	*	*	*		*	std	std		*	*	*	*	*	*		*	*	*	*	*							\$59.95
	HM-103															*											\$59.95	
	SM-6	*		*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*							\$99.95
	SM-8	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*							\$149.95
Mounting Brackets	SM-20	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*							\$188.95
	MB-5									*	*	*	*	*	*	*	*	*	*	*				*		*		\$47.95
	MB-12																					*			*		\$47.95	
	MB-18					*																					\$43.95	
	MB-19		*																								\$59.95	
	MB-23				*																						\$12.99	
	MB-49						*	*	*																		\$49.95	
Handles	MB-62																										\$20.95	
	MB-63																										\$14.95	
Remote Controllers	MB-19	3		*																		3					\$59.95	
	MB-23									*	*	*	*	*	*	*	*	*	*	*				*		*		\$12.99
TV Adapters	RC-11																						*				\$109.95	
	RC-12																								*		\$99.95	
	TV-R7000																								*		\$269.95	
	TV-R7100																								*		\$299.95	
CI-V System	TV-970																				*						\$499.95	
	TV-1275																										\$329.95	
	CT-16	*	*	*		4	*	*	*		*	*	*	*	*	*		*	*	*		*	4					\$119.95
	CT-17	*	*	*	*	4	*		*	*	*	*	*	*	*	*	*		*	*	*		*	4	*		*	\$129.95
High Stability Crystal Units	UX-14					*																					\$99.95	
	CR-64					*					*	*	*	*			*	*	*				*	*			\$109.95	
	CR-263																										CALL	
	CR-282		*	*			*	*	*																		\$124.95	
	CR-293																			*							\$279.95	
	CR-338														*												CALL	
Keyer Unit	CR-502				*											*											\$79.95	
	EX-243					3			*												*						\$99.95	
	FM Unit																							*			\$95.95	
AM-FM Unit	UI-8													*													\$86.95	
	UI-9																										\$95.95	
Tone Encode	UI-7											*	*	*													\$95.95	
	UT-30			*		*	*		*	*	*	*	*	*	*	*		*	*	*							\$44.95	
Voice Synthesizer	UT-34																*	*	*	*	*						\$75.95	
	UT-50																			*							\$75.95	
Voice Synthesizer	EX-310					*														*			*		*		\$85.95	
	UT-36	*		*														*	*	*	*	*	*		*		\$59.95	
	UT-66			*																							\$66.95	
	UT-102				*												*										\$59.95	

1: Style and size are matched with the equipment. 2: An optional OPC-118 CABLE is required. 3: Included. 4: An optional UX-14 is required.
5: Option unnecessary. 6: An optional OPC-137 CABLE is required. 7: for HF band only.

HF Antenna Tuners



AT-500

Fully automatic HF antenna tuner designed for short tune-up time. Automatic band switching (compatible with

the IC-2KL linear amplifier). Matching circuit can be preset for each band. Four antenna connections. Maximum input power 500W. AC or DC. **HRO Price \$999.95**

AH-3

The AH-3 automatic antenna tuner operates with the **IC-725**, **IC-728**, and **IC-729** HF transceivers. Use it with the AH-2b antenna element for mobile operation. The weather-proof design has automatic digital control tuning and eight frequency memories. **HRO Price \$549.95**

AH-2



This automatic HF tuner for the **IC-735** is ideal

for mobile use since no manual tuning is needed. For indoor or outdoor use. 3.5 MHz to 30 MHz. System includes an antenna (AH-2b), the AH-2a tuner and controller units. The AH-2a (tuner and controller) and the AH-2b (mount and whip) may be purchased separately. **HRO Prices: AH-2a \$669.95; AH-2b \$269.95**

Icom HF Tuners

Features	AT-160	AT-150	AH-3	AH-2a	AT-500
Input Power (Watts)					
Max	100	100	120	120	500
Min	8	8	10	10	50
Auto Tune Time (seconds)					
New Band	≤3	≤3	2 - 4	2 - 4	4 - 7
Same Band	≤3	≤3	<1	<1	≤3
Tuning Accuracy	VSWR<1.2:1	VSWR<1.2:1	VSWR<1.5:1 with AH2b	VSWR<1.5:1 with AH2b	VSWR<1.2:1
Auto Antenna Selection		4 antennas			
Auto Band Switching	yes	yes	yes	yes	yes
Preset Matching	CPU Controlled	Auto Preset	CPU Controlled	CPU Controlled	yes
Power Supply	13.8 VDC	13.8 VDC	13.8 VDC	13.8 VDC	13.8 VDC 117 AC
Frequency Coverage	160, 80, 40, 30, 20, 17, 15, 12, 10 Meters	160, 80, 40, 30, 20, 17, 15, 12, 10 Meters	1.8-28 MHz	1.8-28 MHz	160, 80, 40, 30, 20, 17, 15, 12, 10 Meters
Radios	Attaches to IC-706, 728, 729	All Icom HF Rigs	Weather resistant 706, 725, 726, 728, 729,	Weather resistant 735, 751A	All Icom HF Rigs
HRO Price	\$299.95	\$529.95	\$549.95	\$599.95	\$999.95

AT-180

This matching tuner for the **IC-706** is fully automatic and interfaces directly with the radio. The tuner covers the HF bands as well as 50 MHz. **HRO Price \$519.95**

AT-160

This automatic antenna tuner is designed for the **IC-728/729/706**. It has a CPU with

9 memories for quick tuning. Attach it easily to the **IC-728/729** side panel and control it from the transceiver. **HRO Price \$499.95**

AT-150

This matching tuner for the **IC-735** is fully automatic and interfaces directly with the radio. With the appropriate cables, the AT-150 can also be used with the other Icom HF radios. **HRO Price \$529.95**

Icom HF Specifications

Model	Receive Freq Range	Power Supply	Current Drain Xmit	Power Output					Mike Z	Receive Circuitry	Sensitivity 1.8-30 MHz	RIT / XIT Range	Notch Atten	Audio
				AM	FM	SSB	CW	FSK						
IC-706	30kHz-200MHz	13.8 VDC	20A	40*	100*	100*	100*	100*	600 Ω	Triple Conversion	<.16μv at 10 dB	±1.2 kHz		>2.0W
IC-756	300 kHz - 60 MHz	13.8 VDC	20A	40	100†	100†	100†		600 Ω	Triple Conversion	<.15μv at 10 dB	±1.2 kHz		>2.0 W
IC-775/DSP	100 kHz - 29.99 MHz	120 VAC	135 VA	50	200	200	200	200	600 Ω	Quadruple Conversion	<.16μv at 10 dB	±9.9 kHz	auto	>2.6 W
IC-781	100kHz - 30MHz	120VAC	760 VA	75	150	150	150	150	600 Ω	Quadruple Conversion	<.16μv at 10 dB	±9.9 kHz	45 dB	>2.6 W

† Output is continuously adjustable from 5 to 100 W * 10W SSB/CW/FM/RTTY and 4W AM for 2m. Continuously adjustable.

Icom HF Filters

Filter	Center Frequency	Bandwidth	Mode	781	775	765	756	738	737A	736	735	729	728	725	726	707	706	R71A	R72	R9000	List Price
FL52A	455 kHz	500 Hz	CW	std		std	*	*	*	*						*				*	\$196.95
FL53A	455 kHz	250 Hz	CW	std	*	*		*	*	*						*					\$196.95
FL32A	9.0106 MHz	500 Hz	CW	std		std					*							*			\$101.95
FL63A	9.0106 MHz	250 Hz	CW								*										\$97.95
FL100	9.0106 MHz	500 Hz	CW				*	*	*	*		*	*	*	*	*	*	*	*		\$106.95
FL101	9.0106 MHz	250 Hz	CW	std	*	*	*	*	*	*		*	*	*	*	*	*	*	*		\$106.95
FL102	9.0100 MHz	6.0 kHz	AM	std	*	*															\$75.95
FL103	9.0115 MHz	2.8 kHz	SSB	*													*	std			\$89.95
FL-222	455 kHz	1.9kHz	SSB		*		*										*				\$199.95
FL-223	9.0115 MHz	1.9 kHz	SSB		*		*										*				\$84.95
FL-232	9.0115 MHz	350 Hz	CW		*		*										*				\$90.95

2m / 440 MHz Base



IC-821H

\$2040.95

Suggested List Price
Call for HRO Discount Price

This 2m / 440 MHz FM base station transceiver is the perfect rig for satellite work. Satellite communications are enhanced with satellite memory and tracking functions. It is also ready for packet operation. The IC-821H is compact and competitively priced without sacrificing features.

- 45 watts output on 2m and up to 40 watts on 440 MHz.
- All-mode operation (FM, SSB, CW).
- DDS has 1 Hz resolution.
- Compact size enables easy installation in a shack or vehicle. Dimensions may be small, but important points such as LCD size and space between switches are more than adequate.
- High-stability crystal.
- Optional tone scan.
- 2 VFO's for both VHF and UHF bands.
- IF shift for interference reduction.
- RIT function.
- Noise blanker and IF shift for sub band.
- Continuous adjustment transmit power.
- Full-duplex cross over operation.
- Built-in electronic keyer.
- Separate main and sub S-meters.
- Stereo headphone jack and two external speaker jacks.
- Packet operation is supported up to 9600 bps. The DATA terminal is connected to its modulator circuit directly. No modification is necessary even at 9600 bps. The modulator circuit prevents exceeding the maximum deviation even with large amounts of data.
- 50 memory channels can be user allocated to main and sub-bands.
- 2 antenna connectors for VHF and UHF.
- Attenuator prevents signal distortion.
- 160 memories.
- Individual mode selection on each band.
- Re-writable call channels for each band.
- Optional CW filters for main and sub bands.
- Microphone included.
- Satellite communication functions include reverse and normal tracking on the main and sub-band VFOs, and Doppler compensation. There are 10 satellite frequency memories.

2m / 70cm Mobiles

**HRO
Discount Price
\$689.95**

NEW!

IC-2710H

\$856.95

Suggested List Price



Beginners and enthusiasts alike will appreciate the easy operation of this dual-band mobile.

- Multi-function backlit remote-control microphone gives you control of simple and advanced operations without taking your eyes off the road. Has two user-programmable buttons and a removable cover to protect the keypad.
- Separate front panel can be placed in a convenient location. Two optional separation cables are available. (OPC-600, 11.5 feet and OPC-601, 23 feet). Mike connects to the display panel.
- High power: 50 watts VHF, 35 watts UHF output; three RF output power settings.
- High speed programmable scan (3 pairs of scan edge and memory scan).

- 200 regular memory channels store frequency, offset, tone, duplex shift direction. Includes 6 scratch pad memories to store previous transmit frequencies for instant recall; 2 call memories; and 12 band-edge memories. Optional cloning (PC programmable) is available.
- True dual band design with built-in duplexer, independent volume, squelch, function switches. V/V, U/U simultaneous receive and independent VHF and UHF RF circuits for both displays.
- Built-in features: 50-frequency subaudible tone encoder. Intermod protection. 8 DTMF 16 digit memory channels. 50 CTCSS frequencies.
- Optional features: Pager (UT-49), code squelch and external DTMF control via sub-band. Pocket beep, tone squelch and tone scan.



IC-2350H

\$616.95

Suggested List Price

**HRO
Discount Price
\$509.95**

This dual-band FM mobile transceiver has independent tuning knobs and switches for each band for convenient operation while driving. Major features include: 100 memory channels, 50 for each band, storing operating frequency, offset direction, offset frequency, tone squelch (optional UT-89 required) and tone frequency. Programmable tone encoder. 50 W output on 2m; 35 W on 70 cm. Programmable band and memory scanning. Full-duplex operation for cross-band operation.

2m Mobile

IC-2000H

\$311.95

Suggested List Price

**HRO
Discount Price
\$279.95**



With 50 watts of output, this 2 meter rig can reach even the most distant repeaters. Lower settings of 10 and 5 watts are also available. Die-cast aluminum construction and a large heat sink help ensure that operation is stable even at *high duty cycles*. Compact size makes installation a breeze.

- 50 watts output; three output power settings.
- 1 call channel and 60 regular memories plus 6 scan edge memory channels. 2 scratch pad memories store the previous duplex or simplex transmit frequencies for instant recall.

- Alphanumeric notes of up to 6 characters may be displayed on memory channels instead of the frequency.
- Automatic memory channel advance to enhance the programming process.
- Optional tone squelch and pocket beep functions. Send and receive alphanumeric messages up to 6 characters (UT-85 required)
- Optional tone scan when you do not know the tone frequencies (optional UT-85 required).
- Remote control microphone and DTMF Remote Control (optional UT-101 required).

2-Meter Handhelds

HRO
Discount Price
T22 \$249.95
T22-HP \$289.95



IC-T22 IC-T22-HP

**Now with
BP-180
Battery**

Icom's convenient 2m handhelds give you high quality at a price not available before. The slim design fits easily in the hand.

- Easy to use.
- Superior receive audio.
- Wide-band reception.
- 40 memory channels.
- New "log-in" feature automatically memorizes transmitted frequencies.
- Runs directly from 12V for 5 W output.
- Battery pack compatible with the IC-Z1A and IC-W31A.

**World's only
7-Watt HT
HRO Price
\$289.95**



IC-2GXAT-HP

Beginners and seasoned veterans will like the surprisingly simple operation of this high powered 2-meter handheld.

- Output 7 W with BP-132A battery or 13.5 VDC.
- Forty repeater-oriented memory channels and one call channel.
- Programmed or memory scan with skip function.
- Tone scan function.
- Squelch monitor.
- Automatic power saver.
- Lighted display with timer.
- DTMF redial and five auto dial memories.
- Automatic repeater function.
- Channel number indication.
- Subaudible tone encoder, tone squelch and pocket beep. Optional pager and code squelch (UT-49 required)

Dual-Band Receive

HRO
Discount Prices
T21A-\$289.95
T41A-\$329.95



IC-T21A 2m / 70 cm

IC-T41A 70 cm / 2m

The 2 meter IC-T21A transceiver also receives 440 MHz. The IC-T41A 440 MHz transceiver also receives 2 meters. You have full duplex cross band operation between 2 m and 70 cm.

- High speed scan functions (33 channels per second).
- 100 memories with repeater memory.
- 5 DTMF memory channels.
- 5 output power levels and 8 tuning steps. 6 watts with 13.5 VDC.
- 24-hour system clock.
- Dial quick frequency changes.
- Tone scan capability to access repeaters with an unknown tone frequency.
- Built-in pager, code squelch, pocket beep and tone squelch.
- Power on/off timers and auto off function.
- Optional speaker mike with remote control.
- Expanded Rx range possible.

Icom VHF Specifications

	Freq Range	Mode	Power Supply	Current Drain Xmit	Current Drain Rec	Power Out	Ant Z	Mike Z	Sens	RIT/XIT	Audio Pwr	Built-in AC Supply
IC-821H	2m/440 MHz	All	13.8 VDC	11 A	2.0 A	45/35 W	50 Ω	600 Ω	<11 μV		2 W	no
IC-2000H	2m	FM	13.8 VDC	10.5 A	1.0 A	50 W	50 Ω	600 Ω	<13 μV		2.4 W	no
IC-2350H	2m/440 MHz	FM	13.8 VDC	10.5 A	1.8 A	50/35 W	50 Ω	600 Ω	<18 μV		2.4 W	no
IC-2340H	2m/440 MHz	FM	13.8 VDC	10.5 A	1.8 A	45/35 W	51 Ω	601 Ω	<18 μV		2.4 W	no
IC-2710H	2m/440 MHz	FM	13.8 VDC	11.5A	1.8 A	50/35 W	50 Ω	600 Ω	<18 μV		2.0 W	no

Icom Handhelds

Model	Frequency	Power Supply	Power Out Transmit*	Current Transmit	Drain Receive	Sensitivity	Height in(cm)	Width in(cm)	Depth in(cm)	Weight oz(g)	Sugg. List
IC-2GXAT-HP	144-148 MHz†	13.5VDC	3.0/1.0 W	1.8 A	250 mA	<18μV/12 dB	4.9(12.2)	2.2(5.7)	1.1(2.9)	13(365)	\$339.95
IC-T7A	2m/439	7.2 VDC	3.0/1.0 W	1.2 A	600 mA	<16μV/12 dB	4.9(12.5)	2.2(5.7)	1.4(3.5)	11(320)	\$395.95
IC-T21A	2m/440	13.5 VDC	6.0/15 W	1.8 A	160 mA	<16μV/12 dB	4.4(11.1)	2.1(5.4)	1.4(3.5)	11.1(315)	\$307.95
IC-T22	2m	13.5 VDC	5.0/5 W	1.4 A	150 mA	<16μV/12 dB	4.8(12.2)	2.3(5.8)	1.1(2.7)	10.9(310)	\$279.95
IC-T41A	440/2m/440	13.5 VDC	6.0/15 W	1.8 A	160 mA	<16μV/12 dB	4.4(11.1)	2.1(5.4)	1.4(3.5)	11.1(315)	\$360.95
IC-V21	2m/222 MHz	7.2 VDC	1.5 W	1.5 A	200 mA	<16μV/12 dB	4.9(12.5)	2.2(5.7)	1.4(3.5)	14(390)	\$550.95
IC-W31AT	2m/440†	13.5VDC	5.0/5 W	2.5 A	250 mA	<18μV/12 dB	4.3(11.0)	2.2(5.7)	1.1(2.7)	13(345)	\$513.95
IC-W32A	2m/440 #	13.5VDC	5.0/5 W	1.6 A	210 mA	<18μV/12 dB	5.4 (13.7)	2.2(5.7)	1.3(33)	16 (450)	\$479.95

* Power with standard battery pack † Frequency coverage 138-174(receive only outside amateur bands), 440-450 MHz

Extended receive 118-174 MHz and 400-470MHz



**HRO
Discount Price
\$399.95**

NEW!

IC-W32A

2m / 70 cm

\$479.95

Suggested List Price

This upgrade to the IC-W31A has the same features plus many new ones:

- Higher power: The standard BP-173 produces a nominal 5 watts out.
- 200 EEPROM programmable memories are now available.
- No function key is required and a context sensitive "help" guide is provided.
- Analog volume controls and adjustable squelch.
- PC programmable: DOS version available now, Windows soon!
- Wire cloning from another W32A.
- Advances W/UU/VU performance.
- Allows transmitting on VHF and simultaneously receiving on UHF. Same for UHF Tx and VHF Rx.
- More CTCSS frequencies: set Rx and Tx tone separately from 50 built-in frequencies.
- Built-in weather channels, backlit keypad, 8 character alphanumeric display, extended Rx for VHF and UHF.



**HRO
Discount Price
\$379.95**

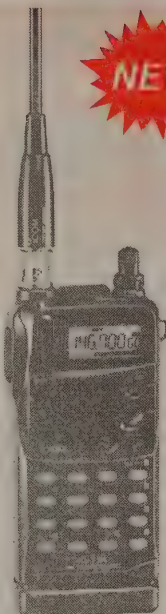
IC-W31A

2m / 70 cm

Now with BP-180 Battery

This transceiver is ultra compact yet has a large display. It combines simple operation with dependable, rugged construction.

- 5 watts maximum output; select 3 power levels.
- 40 memory channels.
- Wide operating voltage from 4.5 to 18 VDC.
- LCD backlit display with 5 second timer function.
- 10 DTMF memories.
- Multiple scan functions.
- Automatic repeater selection.
- Electronic volume switch controls audio level from an optional speaker mike.



NEW!

IC-T7A

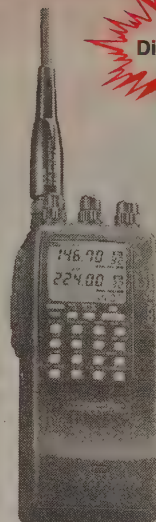
2m / 70 cm

\$339.95

HRO Discount Price

The IC-T7A fits comfortably in the palm of your hand. Carry it in your pocket or a small bag.

- Single VHF / UHF power module.
- One touch operation with no function switch required.
- 3W output with standard 7.2B BP-180 battery; 4W with optional BP-173.
- Easy to use encode/decode included at no charge..
- PC programmable with optional DOS or Windows software.
- Easy scanning display.
- Other features: auto band selection, memory allocation; 70 memories, 9 DTMF autodialing memories; adjustable DTMF transmit speed; high speed scan and scan timer; compatible with T22A, W31A and Z1A accessories; wide band receive; microphone remote control; MHz key for fast tuning; indicator showing approximate battery voltage remaining.



**HRO
Discount Price
\$449.95**

IC-V21AT

220 MHz / 2m

The large display makes this dual-bander easy to use.

- Receive 2 signals on the same band plus full crossband operation.
- Battery capacity indicator.
- Remote control from an optional HM-75 speaker-mike.
- 70 channels. 32 memories and 1 call channel store repeater information plus 2 scan edge channels for each band.
- Built-in pocket beep, pager code squelch and tone squelch.
- 4 DTMF memory channels.
- 5 output power levels.
- Separate speaker control directs one or both bands to an external speaker.
- Key for quick access to often-used functions.

Handheld Batteries / Chargers

Model	Volts	Rating mAh	Wall Charger	Desk Charger	HRO Battery Prices
BP3	8.4	270	BC-25u	BC-35	\$52.95
BP-7	13.2	450	BC-16u	BC-35	\$87.95
BP-8	8.4	800	BC-16u	BC-35	\$96.95
BP-70	13.2	270	BC-16u	BC-35	\$79.95
BP-81	7.2	110	BC-74A	BC-72	\$69.95
BP-82	7.2	300	BC-74A	BC-72	\$62.95
BP-83	7.2	600	BC-74A	BC-72	\$72.95
BP-84	7.2	1000	BC-74A	BC-72	\$96.95
BP-85	12	340	BC-74A	BC-72	\$109.95
BP-101	7.2	700		BC-119*	\$75.95
BP-102	7.2	1200		BC-119*	\$103.95
BP-103	12	600		BC-119*	\$121.95
BP-111	7.2	400	BC-74A	BC-80	\$68.95
BP-112	7.2	700	BC-74A	BC-80	\$79.95
BP-113	7.2	1200	BC-74A	BC-80	\$95.95
BP-114	12	400	BC-74A	BC-80	\$109.95
BP-121	7.2	400	BC-77A	BC-119*	\$89.95
BP-122	7.2	700	BC-77A	BC-119*	\$89.95
BP-123	7.2	1200	BC-77A	BC-119*	\$89.95
BP-124	12	400	BC-77A	BC-119*	\$89.95
BP-131	7.2	900		BC-119*	\$99.95
BP-132	12	600		BC-119*	\$99.95
BP-132A	12	600	BC-77A	BC-119*	\$109.95
BP-157	7.2	900	BC-77A	BC-119*	\$68.95
BP-160	7.2	700	BC-77A	BC-119*	\$53.95
BP-171	4.8	700	BC-74A	BC-119*	\$49.95
BP-172	4.8	650	BC-74A	BC-119*	\$73.95
BP-173	9.6	600	BC-74A	BC-119*	\$109.95
BP-180	7.2	600		BC-119*	\$66.95

*Adapters are required. See Adapter Table.

BC-119 Adapters

Adapter	For Batteries	HRO Price
AD-22	BP-101, BP-102, BP-103	\$46.95
AD-25	BP-131A, BP-132A, BP-157A	\$50.95
AD-26	BP-121, BP-122, BP-123, BP-124	\$14.95
AD-27	BP-100, BP-130	\$14.95
AD-28	BP-131, BP-132	\$14.95
AD-51	BP-171, BP-172, BP-173	\$14.95
AD-56	BP-171, BP-172, BP-173, BP-180	\$14.95

**For Speedy
Delivery,
HRO Ships
From the Store
Nearest You**

Icom Handheld Accessories

OPTIONS	2 METERS										DUAL and TRI BAND										440 MHZ					1200 MHZ	220 MHZ			HRO Price
	2SAT	2GAT	2GXAT	2SRA	T21AT	T22	2IA	02AT	P2AT	2AT	24AT	D1A	V21AT	W2A	W21AT	W31A W32A T7A	X21AT	X2A	Z1A	4SAT	4GAT	4SRA	4IA	04AT	P4AT	12GAT	3SAT	03AT	P3AT	
BATTERY PACKS	BP-3	*						*		std											*			std	*		std			\$52.95
	BP-7	*						std													*			*	*	*	*			\$97.95
	BP-8	*						*		*											*			*	*	*	*			\$96.95
	BP-70		std					*																*		std	*			\$79.95
	BP-81	*			*						*			*				*	*	*	*		*				*			\$89.95
	BP-82	*			*						std			*				*	*	*	*	*	*				*			\$62.95
	BP-83	*			*						*			*				*	*	*	*	*	*				*			\$72.95
	BP-84	*			std						*			*				std	*	*	*	*	std				*			\$96.95
	BP-85	*			*						*							*	*	*	*	*	*				*			\$109.95
	BP-101											*																		\$75.95
	BP-102											*																		\$103.95
	BP-103											*																		\$121.95
	BP-111									std															std			std		\$68.95
	BP-112									*															*			*		\$79.95
	BP-113									*															*			*		\$95.95
	BP-114									*															*			*		\$109.95
	BP-121							std																std						\$89.95
	BP-122							*																						\$89.95
	BP-123							*																*						\$89.95
	BP-124							*																*						\$89.95
	BP-131												*					*												\$99.95
	BP-131A												*					*												\$99.95
	BP-132																	*												\$99.95
	BP-132A			*									*					*												\$109.95
	BP-157																	*												\$68.95
	BP-157A												*					*												\$68.95
	BP-159					*																								\$28.95
	BP-160			*																										\$53.95
	BP-171						*									*			*											\$59.95
	BP-172						*									*			*											\$73.95
	BP-173						*									*			*											\$109.95
	BP-180						*									*			*											\$66.95
BATTERY CASES	BP-4		*					*		*											*			*		*	*	*		\$26.95
	BP-90	*			*					*		*		*				*	*	*	*	*	*			*	*	*		\$28.95
	BP-100									*		*		*				*	*	*	*	*	*			*	*	*		\$28.95
	BP-110							*	*																*			*		\$39.95
	BP-120						*																*							\$39.95
	BP-130										*		*					*												\$28.95
	BP-130A			*								*						*												\$28.95
	BP-170					*										*		*												\$28.95
CABLES	CM-12		*					*									*		*		*	*	*	*	*	*	*	*		\$45.95
	CP-1		1					1		2											1			1		1		1		\$21.95
	CP-11		3					*		2											3			*		3		*		\$32.95
	CP-12	*						*	*	*	*		*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$29.95
	CP-13			*	*							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$32.95
	CP-13L				*		*					*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$32.95
DC-CONV	OPC-254	*						*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$11.95
	OPC-288			*	*			*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$15.95
DC-CONV	DC-1									*																				\$32.95
SPEAKER	HM-46	*		*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$55.95
	HM-46L		*					*													*					*				\$55.95
	HM-54	*		*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$66.95
	HM-55			*									*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$119.95
	HM-65				*							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$61.95
MICS	HM-70			*								*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$66.95
	HM-75											*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$77.95
	HS-60				*							*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$97.95
HEADSET	HS-51	*	*	*			*	*	*	*	4	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$77.95
	HS-85															*			*						*	*	*	*	*	\$84.95
	HS-85															*			*						*	*	*	*	*	\$84.95
MOUNTING BRACKETS	MB-24		*																		*					*				\$32.95
	MB-25		*																		*					*				\$33.95
	MB-30	*		*	*				*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	\$32.95
INTERNAL OPTIONS	UT-40		*																		*									\$66.95
	UT-49	*		*																	*						*			\$59.95
	UT-50	std									*										*						*			\$59.95
	UT-63												*		*		*				*									\$99.95
	UT-70											std	*																	\$144.95
	UT-71											*																		\$109.95
	UT-72							std																std						\$109.95
	UT-86			*																										\$55.95
	UT-93																		*											\$9.99
	UT-94															*														\$44.95
OTHER OPTIONS	AD-12		*																		*					*				\$34.95
	AD-20				*									*				*		*	*	*	*	*	*	*	*	*	*	\$50.95
	BA-10							*											*				*	*	*	*	*	*	*	\$9.95
	BA-11	*			*					*				*				*	*	*	*	*	*	*	*	*	*	*	*	\$9.95
	BA-12	*															*				*					*	*	*	*	\$24.95

1 For charging BP-3, BP-5A, BP-7, BP-8, BP-70 2 Optional DC-1 is required 3 Optional AD-12 is required 4 Except for full duplex operation

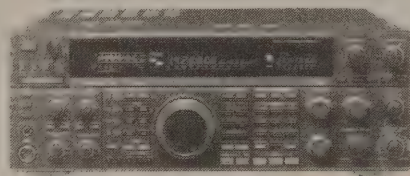


TS-870S
It's Revolutionary
\$3199.95
Suggested List Price

HRO
Discount Price
\$2299.95

DSP at the IF stage is now a reality with Kenwood's new TS-870S HF transceiver. This design uses state-of-the-art DSP chips to provide receiving enhancement that brings signals out of the noise. Complete computer operation and control of the TS-870S is possible with MS windows software included and a built-in RS-232C port.

- 100 kHz-30 MHz general coverage receiver.
- 100 watts output, 25 watts on AM.
- Multiple scanning functions.
- Multi-function digital filtering.
- Dual-mode noise reduction. Variable AGC. Beat canceler and automatic notch filter.
- Selectable voice equalizer. Speech processor. Voice synthesizer option (VS-2).
- Selectable transmit equalizer.
- VOX and QSK.
- Full function CMOS Super Keyer II.
- Built-in automatic antenna tuner.
- Two selectable antenna terminals with SO-239 connectors. External receiver antenna output jack.
- Dual VFO.
- Easy-to-use menu system for quick setting of functions.
- Built-in tone encoder.
- High-quality 60-second digital recording unit option (DRU-3).



TS-950SDX
\$4799.95
Suggested List Price

HRO
Discount Price
\$3999.95

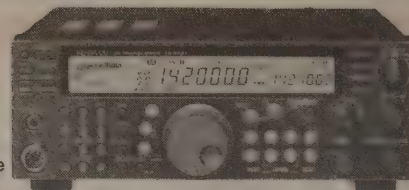
Kenwood's top-of-the line HF transceiver. The design includes Digital Signal Processing (DSP), high power MOSFET-type finals, simultaneous dual-receive and much more.

- 100 kHz - 30 MHz general coverage, quadruple conversion receiver
- 100 memories.
- 160-10 meter ham bands.
- High power with MRF150MP finals.
- Built-ins: automatic antenna tuner, dual digital VFO's, illuminated keyboard, memory channel / VFO control, and RIT / XIT.
- Fine tune in 1 Hz steps.
- Multiple scan functions.
- Built-in AF digital filter, multi-drive bandpass filter.
- Built-in dual noise blankers, IF filters, selectable IF filter in memory, 4-position RF attenuator, and auto-AGC.
- Full and semi break-in electronic memory keyer, variable pitch control.
- Menu-driven control of various functions.
- RM-1 remote keyboard.
- Front panel control of DSP.
- Optional DRU-2 voice memory device available for SSB contest use.
- 500Hz CW filter in sub-receiver.

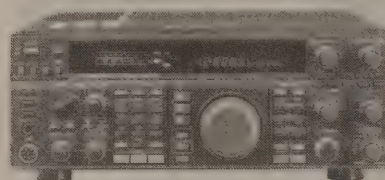


TS-570D
\$1819.95

Suggested List Price
Call For HRO's Discount Price



The TS-570 represents the new standard in performance for middle class HF rigs. Perfect for base or mobile operation. Major features include 16-bit DSP AF signal processing, large LCD display, preset auto antenna tuner, 100 memory channels, 10 key direct entry, full and semi breakin CW operation, dedicated packet port, high speed 57600 bps PC control, CW auto tune, built-in electronic keyer, CW message memory, menu system, CW reverse mode.



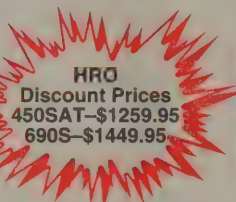
TS-850S
\$1949.95

Suggested List Prices

TS-850S / AT
\$2149.95

This HF transceiver is a 12 volt high performance transceiver with a general coverage receiver of the TS-950SDX caliber. It is available with or without the internal automatic antenna tuner.

- 160-10 meter amateur operation (MARS modifiable).
- General coverage receiver 150 kHz - 30 MHz.
- SSB IF slope tuning with independent high & low cut control.
- IF notch filter. Audio filter.
- Optional external AC power supply PS-52.
- Full and semi break-in CW. Fine tuning on CW.
- Speech processor, RIT/XIT, keyer.
- 10 Hz dial resolution.
- 100 memory channels store receive and transmit frequencies.
- Keyboard frequency entry.
- Dual mode noise blanker; RF attenuator; switchable AGC.
- Optional DSP-100 Digital Signal Processor converts audio signals to digital information for cleaner SSB and CW signals.

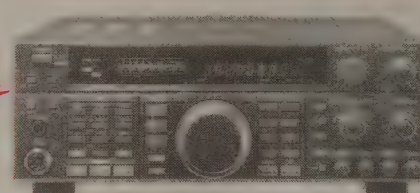


HRO
Discount Prices
450SAT-\$1259.95
690S-\$1449.95

TS-450S
\$1439.95

Suggested List Prices

TS-690S
\$1759.95



These compact models give you competition class reception and 100W, 100% duty transmission capabilities across all nine HF bands. The TS-450SAT incorporates an automatic antenna tuner for easy antenna coupling. The TS-690S has the same features as the TS-450S plus the 50 MHz band.

- 500 kHz - 30 MHz general coverage all-mode receiver on TS-450S plus 50-54 MHz on TS-690S (MARS modifiable).
- 160-10 meter amateur operation on TS-450S; plus 6 meters on TS-690S.
- Dual VFO's; RIT / XIT; IF shift and selectable IF filter.
- Full break-in for CW with CW reverse.
- Speech processor, tunable AF notch filter, dual-mode noise blankers and RF attenuator.
- Multiple filter options selectable from the keypad.
- 10 Hz dial resolution, 100 memory channels.
- Multiple scanning functions, switchable AGC.
- Optional internal automatic antenna tuner for 80-10 meter operation.

HF ACCESSORIES

Speakers



SP-950

The **SP-950** is the base station speaker with cabinet styling to match the TS-950S and TS-950SDX. **Suggested List Price \$159.95**

To match the styling of the TS-850, order the **SP-31**. **HRO Price \$99.95**

To match the styling of the TS-450S and TS-690S, order the **SP-23** speaker. **Suggested List Price \$89.95**

Antenna Tuners

AT-450

The AT-450 is an option for the TS-450S and TS-690S. The installation can be easily accomplished with only a screwdriver. The tuner only works with the TS-450S and TS-690S and covers 80 - 10 meters.

Suggested List Price \$249.95

AT-300

The AT-300 is a specialized antenna tuner that can be used with the TS-450S for mobile or marine operation. It will automatically tune a whip or random length of wire. **Suggested List Price \$689.95**

Power Supplies

PS-31

The PS-31 power supply is designed especially for the TS-790A. The supply is for 110 VAC only and provides 13.8 VDC output rated 20 A for a 25% duty cycle, 15 A at a 50% duty cycle. **Suggested List Price \$219.95**

PS-52

The PS-52 heavy duty power supply is for the TS-850 operating all modes for the rated periods of time. The supply provides 13.8 VDC at 22.5 A. The PS-52 has a cooling fan and protection circuits. **Suggested List Price \$289.95** Call for Quote

PS-53

The PS-53 heavy duty power supply is for the TS-450S/TS-690S operating all modes for the rated periods of time. The supply provides 13.8 VDC at 20.5 A. The PS-53 features a cooling fan and protection circuits. **Suggested List Price \$269.95** Call for Quote

Kenwood HF Specifications

		Power Supply		Current Drain		Power												
Model	Receiver Frequency Range	50/60 Hz AC	DC	Xmit	Rec	AM	FM	SSB	CW	FSK	FSK Shift	Mike Z	Receive Circuitry	Sensitivity	RIT / XIT	Notch Filter	Audio	
TS-950SDX	100 kHz - 30 MHz	120/220/240 V		700 W max	80 W	40	150	150	150	150	170 Hz	500 Ω-50 kΩ	Quadruple Conversion	<2μV SSB,CW,FSK	±9.9 kHz	> 45 dB	1.5 W	
TS-870S	101 kHz - 30 MHz		13.8 V			25	100	100	100	100		501 Ω-50 kΩ						
TS-850S	100 kHz - 30 MHz		13.8 V	20.5 A	2 A	40	100	100	100	100	170 Hz	500 Ω-50 kΩ	Triple Conversion	<2 μV SSB, CW, FSK	±9.9 kHz		1.5 W	
TS-570D	101 kHz - 30 MHz		13.8 V					100	100	100		501 Ω-50 kΩ						
TS-450S	500 kHz - 30 MHz		13.8 V	20.5 A	2.1 A	40	100	100	100	100		500 Ω-50 kΩ	Triple Conversion	< .25 μV	±1.1 kHz	20 dB	1.5 W	
TS-690S	500 kHz - 30 MHz & 6m		13.8 V	20.5 A	2.1 A	40†	100#	100#	100#	100#	-	500 Ω-50 kΩ	Triple Conversion	<25 μV at 10 dB**	±1.1 kHz	20 dB	1.5 W	
TS-50S	500 kHz - 30 MHz		13.8 V	20.5 A	1.5 A	25	100	100	100			600 Ω	@	< .25 μV	±1.1 kHz		2 W	
TS-60S	50 - 54 MHz		13.8 V	20.5 A	2.0 A	25	90	90	90			600 Ω	@	< .25 μV			2 W	

* Input Power ** 6m <16μV at 10 dB ‡20W Out at 6m # 50 W Out at 6m @ Double Conversion SSB, CW, AM; Triple FM

Station Monitor

SM-230

\$1169.95

Suggested List Price
Call for HRO
Discount Price



The SM-230 station monitor is a peripheral to the TS-950 HF transceiver. Using a 6 inch square CRT, it is a multi-function monitor scope with oscilloscope, band scope, monitor scope, RTTY cross pattern observation, and tone generator. Its frequency range is 1.8 - 150 MHz.

Kenwood HF Accessories

Option	Model	950 SDX	940S	930S	850S	870S	570S	450S 690S	440S	430S	140S 680S	50S	60S	HRO Discount Price
Microphone	Hand	MC-43S	std	std	std	std		*	std	std	std	std	*	\$59.95
	Hand	MC-47						*				std	std	\$59.95
	Desk	MC-60A	*	*	*	*		*	*	*	*	*	*	\$139.95
	Desk	MC-80	*	*	*	*		*	*	*	*	*	*	\$109.95
	Desk	MC-90	*				*							\$249.95
Filters	250Hz CW	YG-455CN-1	*	*	*	*		*						\$159.95
	500Hz CW	YG-455C-1	std	*	*	*		*			*			\$149.95
	500Hz CW	YK-455C-1						*			*			\$104.95
	6kHz AM	YK-88A-1		*	*									\$99.95
	500Hz CW	YK-88C							*	*				\$129.95
	500Hz CW	YK-88C-1	std	*	*	*		*	*					\$129.95
	270Hz CW	YK-88CN							*	*				\$129.95
	270Hz CW	YK-88CN-1	*			*		*						\$129.95
	1.8kHz SSB	YK-88SN		*					*	*				\$129.95
	2.4kHz SSB	YK-88S-1						*						\$129.95
	1.8kHz SSB	YK-88SN-1	*			*		*						\$129.95
High Stability Oscillator	SO-2	std			*		*	*				*	*	\$169.95
	HS-5		*	*	*	*	*	*	*	*	*	*	*	\$79.95
Headphones	HS-6		*	*	*	*	*	*	*	*	*	*	*	\$59.95
	SP-41						*	*	*	*	*	*	*	\$49.95
External Speaker	SP-31				*									\$99.95
	SP-50B						*	*	*	*	*	*	*	\$55.95
	SP-23						*	*						\$76.95
	SP-950	*												\$139.95
	PC-1A	*	*	*	*	*	*	*	*	*	*	*	*	\$129.95
Phone Patch	VS-2	*			*			*						\$69.95
Voice Synthesizer	VS-3						*							TBA
Station Monitor	SM-230	*	*	*	*			*	*	*	*	*	*	\$1,029.95
Antenna Tuner	AT-50											*	*	\$339.95
	AT-300				*			*				*	*	\$629.95
	AT-450							*						\$249.95
	AT-850				*									\$249.95
Mobile Mount	MB-13											*	*	\$39.95
	MB-430						*	*	*	*	*	*	*	\$49.95
Power Supply	PS-33							*	*	*	*	*	*	\$199.95
	PS-40											*	*	\$199.95
	PS-52				*									\$279.95
	PS-53						*	*				*	*	\$229.95
Voice Memory	DRU-2	*			*									\$134.95
	DRU-3					*								\$125.95
	DRU-3A						*							TBA

KENWOOD

HF and 6 meter Mobiles



TS-50S

\$1294.95

TS-60S

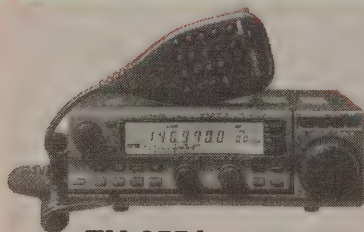
\$1209.95

Suggested List Prices
Call for HRO Discount Prices

The TS-50S is for HF and the TS-60S is for 6 meters only. They feature all-mode operation (AM, CW, SSB and FM) with 100W (90W TS-60S) on CW / SSB / FM and 25 watts on AM. They feature 2 VFO's and 100 memories. The compact size and weight makes them the perfect mobile rigs.

- TS-50S has a 500 kHz-30 MHz general coverage receiver (not available on TS-60S).
- DDS with "Fuzzy" control logic.
- Speech processor.
- Weighs only 6.4 pounds.
- Full/semi break-in.
- Convenient menu programming.
- All mode squelch and CTCSS encode built-in (TS-60S).
- Automatic gain control (slow / fast).
- IF shift and TF set.
- Computer control (optional).

All Mode Mobiles



TM-255A - 2 meters

\$1109.95

TM-455A - 70 cm

\$1279.95

Suggested List Prices - Call for HRO Discounts

This innovative family of radios features a detachable front panel for easy vehicle installation.

- 40 watts (TM-255A) and 35 watts (TM-455A) output with high / low switch.
- All mode operation.
- 1200 / 9600 bps packet ready.
- Twin tuning, dual menu
- IF Shift (SSB and CW), pulse noise blanker.
- 101 memories and multiple scan functions.
- DDS (Direct Digital Synthesis)
- Tone alert with elapsed timer.
- Built-in CTCSS encoder. Optional TSU-8 tone decoder.
- Built-in TX temperature compensated crystal oscillator.

Mobile Accessories

Travel Case

TC-50

Kenwood's travel case was custom designed to carry the TS-50S, AT-50, paddles, power supply, and other accessories. Built out of durable materials and backed by a lifetime warranty, this case will expand your operating enjoyment. **Suggested List \$89.95**

Power Supply

PS-40

The PS-40 switching power supply is rated at 23 amps and similar in size to the TS-50. The supply is for 110-230 VAC. **WEIGHS ONLY 4.5 POUNDS** **Suggested List Price \$229.95.** Call for Quote.

Antenna Tuner

AT-50

A fully automatic antenna tuner to use with the TS-50 and other 100 watt HF transceivers. Mobile or fixed operation. Can be installed remotely. **Suggested List \$369.95**

Speakers SP-41 & SP-50B

For mobile speaker applications, Kenwood provides the **SP-41 (\$49.95)** and the **SP-50B (\$55.95)**. The SP-41 is a small square speaker and the SP-50B is a thin rectangular speaker.

Single-Band FM Mobiles

TM-261A

2 meters

\$289.95

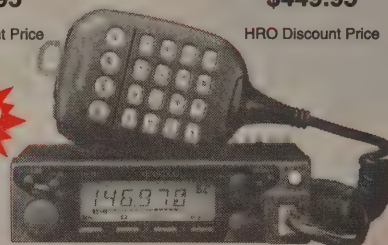
HRO Discount Price

TM-461A

70 cm

\$449.95

HRO Discount Price



Mobile communications just got easier with these fully equipped, user-friendly single banders. Both have high RF output, rugged construction (MIL-STD), 60+2 (call) multi-function memory channels, memory name function with 6-digit alphanumeric display, DTSS selective calling, multi scan capability, dual menu system, multi-function microphone and wireless cloning function. They also have air-band receive, auto repeater offset (TM-261A), repeater reverse switch, built-in CTCSS tone encoder (decode optional), busy channel lockout, auto power off and time-out timer.

TM-251A

2 meters

\$529.95

TM-331A

220 MHz

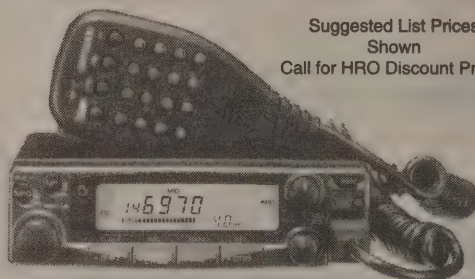
\$539.95

TM-451A

70 cm

\$559.95

Suggested List Prices
Shown
Call for HRO Discount Prices



These compact single-band FM transceivers are available for 2 meters, 220 MHz, or 70 cm. The TM-251 also receives aircraft band.

- TM-251A is for 2 m with a 70 cm receiver; TM-451A is for 70 cm and includes a 2 m receiver.
- Fixed band and same band repeater functions (cross-band duplex).
- 41 multifunction memory channels store frequency (200 with optional ME-1), repeater offset, CTCSS frequency. Encode built-in. Decode with optional TSU-8.
- 10 DTMF 15-digit memories.
- Fuzzy logic tuning control.

- Automatic offsets on the TM-251.
- Multifunctional microphone allows control of the major functions of the radio right from the microphone. Mike includes a 16 key DTMF pad.
- Band scan, program scan, memory scan, call scan.
- High power output. 50W (TM-251A), 25W (TM-331A), 35W (TM-451A).
- Built-in digital recording system.
- 6-pin mini DIN connector (1200/9600 bps packet) (Not with TM-331A).
- Dual menu system, DTSS with page, and S-meter squelch.
- Auto power off and time out functions.

MOBILES & ACCESSORIES

Dual-Band Mobile



TM-733A-BLMD

\$829.95

Suggested
List Price

**HRO
Discount Prices
TM-733ABLMD
\$519.95**

Kenwood's FM dual bander is tailored for hassle free mobile communications with a unique "6-in-1" programmable memory. Six entire operating profiles from frequency range to dimmer level can be stored for instant recall. The transceiver is packed with a complement of sophisticated features. The TM-733-BLMD has the MC-53DM backlit microphone and external duplexer.

- Same band dual receive.
- 50 watts output on 2 meters (144-148 MHz), 35 watts output on 70 cm (438 - 450 MHz).
- 3-position RF output power control.
- 72 memory channels.
- "6-in-1" programmable memory.
- Dual receive available on the same band (VHF+VHF or UHF+UHF).
- Time-operated and carrier operated scan stop modes.
- Built-in DTSS selective calling with page.
- Multi-function scanning allows band scan, memory scan and memory channel lockout.
- Built-in CTCSS encoder with optional TSU-8 decoder.
- Incremental MHz key.
- Wireless clone function.
- S-meter squelch.
- Tone alert system has elapsed time indicator.
- Separate speaker terminals for each band (switchable).
- Multifunction DTMF microphone supplied. TM-733A-BLMD has MC-53DM back-light microphone and external duplexer.
- Repeater reverse and offset switch.
- Auto repeater offsets (144 MHz).
- Built-in jack for 1200 / 9600 bps packet use.
- AIP (Kenwood's exclusive circuit for enhancing RX performance).
- Optional quick-release kit available as an added anti-theft measure.

Multi-Band FM



TM-642AD 2m & 220 MHz Plus

TM-742AD 2m & 440 MHz Plus

Call HRO for Discount Prices

This multi-band FM transceiver family provides dual band (144 / 440 MHz or 144 / 220 MHz) operation with the capacity to expand to triple band operation by adding optional module for 28 MHz, 50 MHz, 220 MHz, or 1200 MHz.

- Extended 2 meter receive.
- TM-742AD covers 144 MHz and 440 MHz at 50 W on 2m, 35 W on 440 MHz.
- TM-642AD covers 144 MHz and 220 MHz at 50 W/25W.
- Multiple scan modes:
- Built-in DTSS with pager and CTCSS encode.
- Backlit microphone.

- Independent receive function with display for each band. Choice of single, dual or triple band operation. Selectable full (triple band) cross-band operation is available.
- 100 memory channels plus a call channel for each band.
- Direct frequency input to the VFO from DTMF microphone.
- Remote front panel mount kits optional.

Kenwood VHF Accessories

Option		Model	211A 411A	221A 421A 521A	231A 331A 431A 531A	241A 441A 541A	251A 451A 551A	255A 455A	261A 461A	711A 811A	751A 851A	2530A 2550A 2570A	4100A	621A 721A	631A 731A	732A	733A	542A 742A 942A	641A 741A	941A
Microphone																				
	Hand	MC-43S	*	*	*					*	*	*	*	*	*					
	Hand	MC-44DM		*	std	std									*					
	Hand	MC-45														std				
	Hand	MC-45DM					std	std									*	*	*	*
	Hand	MC-48B	*	*	*		*	*		*	*	*	*	*	*	*	*	*	*	*
	Hand	MC-52DM			*	*											*	*	*	*
	Hand	MC-53.DM					*	*									*	*	*	*
	Desk	MC-60A	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*
	Desk	MC-80	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Desk	MC-85	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*
Modular Mic Switch		MJ-89							*									*		
Modular Plug Adapt		MJ-88							*											
External Speaker		SP-41	*	*	*	*			*		*	*	*	*	*	*	*		*	*
		SP-50B	*	*	*	*			*		*	*	*	*	*	*	*		*	*
Voice Synthesizer		VS-2											*							
Noise Filter		PG-3B	*	*	*	*			*		*	*	*	*	*	*	*		*	*
Tone		TU-7									*	*	*							
		TSU-5		*																
		KQT-8			*	*								*	*					
		TSU-7															*	*	*	*
		TSU-8						*	*								*	*	*	*
DTMF Unit		DTU-2				*	*										*	*	*	*
Memory Unit		ME-1					*													
Mobile Mount		MB-11											*	*	*			*	*	*
		MB-14																*		
		MB-201		*	*	*			*								*			
		MB-430								*										
Power Cable		PG-2N	*	*	*	*	*	*		*	*	*	*	*	*	*	*	*	*	*
Data Cable		PG-5A																		
Extension Cables		DFK-3'																*		
	13'	DFK-4'																*		
	22'	DFK-7'											*					*		

KENWOOD

VHF BASE & RECEIVER

Kenwood VHF / UHF Specifications

VHF / UHF All Mode



HRO
Discount Price
\$1799.95

TS-790A
\$2149.95

Suggested List Price

The TS-790A was designed to be the ultimate in VHF / UHF all-mode operation. Special features make it easy to use as an Oscar station.

- Operates all modes SSB, CW, FM.
- 2m and 440 MHz are standard with dual displays. Optional 1.2 GHz with UT-10.
- Receives 140-168 MHz. Modifiable for MARS / CAP transmitting.
- Dual VFO with tracking and dual watch.
- IF shift, RIT, noise blanker, and fast/slow AGC.
- Channelized tuning for normal FM repeater use.
- 59 memories with alert and call channels.
- Standard and non-standard channel splits can be stored in memories.
- Optional VS-2 voice synthesizer and optional TSU-5 decode unit.
- Requires external 13.8 VDC power supply such as the Kenwood PS-31.

Receiver



R-5000
\$1179.95

Suggested List Price

HRO
Discount Price
\$1019.95

This competition class communications receiver has every conceivable feature required by the serious shortwave listener. It is designed to receive all modes (LSB, USB, AM, CW, FM) from 100 kHz to 30 MHz. With the optional VC-20 converter unit, coverage is extended to include 108-174 MHz. (VC-20 installed by dealer.)

- 10 Hz step dual VFO's for SSB, FSK and CW. 100 Hz for AM and FM. VFO's operate independently.
- Dual high / low impedance antenna terminals.
- 100 memories store frequency, mode and antenna selection.
- Keyboard frequency selection for direct entry.
- 102 dB dynamic range.
- Memory and programmable band scan.
- Dual 24 hour clocks with timer.
- Built-in AC power supply. 110 VAC only; UL approved. Use 12 VDC with optional DCK-2.

Model	Power Supply	Current Drain		Output Power	Sensitivity	RIT/XIT Range	HRO Price
	DC	Transmit	Receive				
TM-251A	13.8 V	11 A	0.6 A	50 W	<.16 μ V		\$319.95
TM-261A	13.8 V	11 A	0.6 A	50 W	<.16 μ V		\$299.95
TM-331A	13.8 V	6.5 A	0.6 A	25 W	<.16 μ V		\$489.95
TM-451A	13.8 V	10 A	0.6 A	35 W	<.16 μ V		\$449.95
TM-642AD**	13.8 V		1.2 A	50V/25††	<.16 μ V		\$829.95
TM-733A BLMD	13.8 V	11.5 A	1.2 A	50V/35U	<.16 μ V		\$589.95
TM-742AD	13.8 V	11.5 A	1.2 A	50V/35U	<.16 μ V		\$699.95
UT-50S**		11.5 A	1.2 A	50 W	<.16 μ V		\$339.95
UT-220S**		7 A	1.2 A	25 W	<.16 μ V		\$339.95
UT-1200**		6.5 A	1.2 A	10 W	<.16 μ V		\$379.95
TM-255A	13.8 V	13 A	0.9 A	40 W	<.13 μ V	2.2 kHz	\$879.95
TM-461A	13.8 V	10 A	0.6 A	35 W	<.16 μ V		\$449.95
TS-790A	13.8 V	15 A	2.5 A	*	<.22 μ V †	±9.9 kHz #	\$1,799.95

† SSB/CW < .16

†† 220 MHz

SSB/CW ± 1.9

* VHF FM/CW 45 W; UHF FM/CW 40 W; 1200 MHz FM/CW/SSB 10W; VHF SSB 35 W; UHF SSB 3C

**These modules used by TM-641, TM-942, TM-741A also.

Kenwood Handheld Specifications

Model	Freq Range	Power Supply	Power Out†	Current Transmit	Current Receive	Sensitivity	Height in(cm)	Width in(cm)	Depth in(cm)	Weight oz(g)	HRO Discount Price
TH-22AT	144-148 MHz	6 VDC	3 W	1.3 A	45 mA	<.16 μ V	4.6 (11.7)	2.2 (5.6)	.96 (2.5)	10.2 (290)	\$249.95
TH-42AT	438-450 MHz	6 VDC	2.5 W	1.6 A	45 mA	<.18 μ V	4.6 (11.7)	2.2 (5.6)	.96 (2.5)	9 (242)	\$339.95
TH-28A	144-148 MHz	7.2 VDC	2.5 W	1.5 A	60 mA	<.18 μ V	4.6 (11.5)	1.9 (4.9)	1.5 (3.8)	12 (330)	\$324.95
TH-48A	438-450 MHz	7.2 VDC	2.0 W	1.5 A	70 mA	<.18 μ V	4.6 (11.5)	1.9 (4.9)	1.5 (3.8)	12 (330)	\$399.95
TH-79A (D)	2m & 440MHz	6 VDC	2.7 W#	1.3 A	80 mA	<.16 μ V	5.1 (12.9)	2.1 (5.6)	1 (2.5)	15 (400)	\$409.95

† Higher power output with optional batteries # 2 watts for 440 MHz

Kenwood Handheld Options

Option	Model	21BT 31BT 41BT	22AT 42AT	26AT 46AT	27AT 47AT	28A 48A 78A	25AT 45AT 75AT	77A 79A(D)	215AT 315AT 415AT	225AT	2600A 3600A	HRO Price
Headset	HMC-3		*	*	*		*	*	*	*		\$72.95
	EMC-1							*				\$43.95
Speaker Mic	SMC-32	*	*		*		*	*	*	*	*	\$52.95
	SMC-33		*	*	*			*				\$65.95
	SMC-34		*		*			*				\$66.95
Prog. Tone Decoder	KQT-8						*					\$49.95
	TSU-7			*		std						\$59.95
	TSU-8		*									\$58.95
DC/DC Converter	KVC-1							*				\$33.95
	PG-2W		*		*	*						\$17.95
Filtered Cigarette	PG-3J				*			*				\$51.95
Lighter Cord	PG-3E						*		*	*		\$49.95
Base Quick Charge	BC-15A				*	*						\$79.95
Battery Case	KSC-14		*					*				\$87.95
	BT-8				*	*						\$19.95
Softcase	BT-9		*					*				\$29.95
	SC-33					*						\$24.95
	SC-34					*						\$24.95
	SC-37		*									\$24.95
	SC-39		*									\$24.95
	SC-41							*				\$24.95
Wall Charger	SC-43							*				\$24.95
	BC-17		*									\$29.95

HANDHELDS

Dual Band



TH-79A (D)

\$629.95

TH-79A (D)-HP

\$649.95

Suggested List Prices

HRO
Discount Prices
\$409.95
HP-\$429.95

Kenwood's TH-79A (D) Deluxe dual-band handheld offers the optimum combination of operating ease and powerful performance in a compact, lightweight design.

- Skip-Scan feature now included.
- Dot-matrix LCD and menu system. Displays frequency data and a menu system with full alphanumeric function display and settings
- 2.7 watts on 2 meters. 2.0 watts on 70 cm with the standard PB-32 NiCd battery.
- 5.0 watts on both bands with optional PB-34 NiCd battery or with 13.8 VDC operation.
- 82 non-volatile memory channels, with ID. An alphanumeric ID (max. 7 characters) can be stored with each channel. No battery backup is needed.
- Features full-duplex cross-band operation and has the ability to simultaneously receive two frequencies even when on the same band.
- Equipped with a high efficiency FET power module.
- Guide function on the LCD panel display eliminates the need to carry a manual.
- DTMF key pad with DTMF memory function.
- Dual Tone Squelch with page.



HRO Discounts
22AT-\$249.95
42AT-\$339.95
TH-22AT-HP
5 watts-\$285.95

TH-22AT

2 meters

\$349.95

TH-42AT

70 cm

\$389.95

Suggested List Prices

Kenwood's ultra compact hand held transceivers are available for either 2 meters or 440 MHz.

- Extended receiver frequency coverage 136 - 174 MHz on the TH-22AT.
- Five watts output with optional PB-34 battery or with 13.8 VDC power.
- Selectable 3 position output power control.
- Operates from 5.0 to 16 VDC allowing easy connection to the car battery or power supply.
- 40 memories with odd offset capability in one memory.
- Selectable memory CH number display mode.
- Multiple scanning functions.
- Tone alert system with received time indication.
- Wireless cloning function.
- Built-in CTCSS tone encoder.
- Built-in Time Out Timer and busy CH lock out.
- DTSS Dual Tone Squelch System with pager function built-in.
- DTMF memory function for auto-dial operation 5, 15 digit channels.

TH-28A

\$399.95

Suggested List Price

HRO
Discount Price
\$324.95



2m with
440 MHz
Receive

TH-48A

\$449.95

Suggested List Price

HRO
Discount Price
\$399.95



440 MHz
With 2m
Receive

The TH-28A covers two meters and includes a built-in UHF receiver: 118-173 MHz RX, 144-147.995 TX, 438-449.995 RX. It has 2.5 watts output with the standard PB-13 battery.

The TH-48A covers 70 cm and includes a built-in two meter receiver: 438-449.995 MHz TX/RX, 136-173.995 MHz RX. It has 2 watts output using the standard PB-13 battery pack.

Features common to both radios are:

- Both handhelds are equipped with a switchable dual-band (144 MHz / 440 MHz) receive capability for semi-duplex cross-band operation.
- Alpha-numeric six character display and memory paging.
- Includes a high capacity NiCd battery pack, the PB-13, for 2.5 watts output on the TH-28A, or 2.0 watts output on the TH-48A.
- Multifunction band scanning or the 41 memory channels (expandable to 240 memories with the optional ME-1).
- 5 watts power output available with the optional PB-14 or PB-17, or with 13.8 VDC operation.
- 15 digit auto-dialer, including , #, A, B, C, D. Auto-dialer memory for up to 10 phone numbers.
- Built-in digital clock and encode / decode unit.
- 10 minute time-out timer to extend battery life.
- Direct keyboard frequency entry.
- CAP / MARS modifiable with proper license.
- All the TH-27 / TH-78 accessories are compatible.

Handheld Battery Packs / Chargers

Battery	Voltage	Rating MAH	Desk Charger	Radio Series	HRO Price
KNB-5A	7.2	800	KSC-7/8	TH-25/26/45/46/55/75/77	\$63.95
KNB-6A	7.2	1100	KSC-7/8	TH-25/26/45/46/55/75/77	\$99.95
KNB-7A	12	800	KSC-7/8	TH-25/26/45/46/55/75/77	\$89.95
PB-13	7.2	700	BC-15A	TH-27/47/28/48/78	\$67.95
PB-17	12	700	BC-15A	TH-27/47/28/48/78	\$74.95
PB-18	7.2	1100	BC-15A	TH-27/47/28/48/78	\$89.95
PB-32	6	600	KSC-14	TH-22AT/42AT/79A	\$39.95
PB-33	6	1200	KSC-14	TH-22AT/42AT/79A	\$89.95
PB-34	9.6	600	KSC-14	TH-22AT/42AT/79A	\$89.95

Kenwood Power Cables

Part Number	Radio	HRO Price
PG-2Z	TS-140, 690, 790, 450, 850, 130, 440, 570	\$37.95
PG-2N	TM-2530/50/70, 721, 621A, 221/321/421, 241, 231/431/531, 251/451/551, 255/455, 261/461, 441, 201B, 401B, 541, 631, 642A, 731, 741, 941, 732A, 733A, 642A, 742A, 942A, TR-751A	\$17.95
PG-2W	TH-26, 46, 28, 48, 79	\$17.95
PG-2Y	TS-50S/60S	\$39.95
PG-3J	TH-22AT, 26, 27, 46, 47, 79A	\$37.95



STANDARD®

The largest manufacturer of VHF/UHF
Amateur Radio equipment in the world.

Reeeally Small HTs

C508A

2m / 70 cm
Dualband

\$289.95

HRO Discount Price

- 2m / 440 MHz TX.
- Receives 100-180 MHz, 340-400 MHz, and 400-480 MHz.
- Program for AM aircraft receive.
- 60 memories + 2 VFO, 2 call.
- 22-selection menu-driven screen.
- Back-lit display.
- CTCSS 39-tone encode / decode.
- Uses 2AA batteries. Power output 0.28W.
- Approx. 2.28" W, 3.35"L, .98"D.
- Weight 5.65 oz.



C108A

2 Meter
Handheld

\$269.95

Suggested List

- 144-147.995 MHz transmit.
- 100-174.995 MHz receive.
- Power output with standard battery 0.2W.
- Small and compact.
- CTCSS encode built-in.



**HRO
Discount Price
\$229.95**

Small HTs

C156A

2 Meter
Handheld

\$289.95

Suggested List

- 144-147.995 MHz transmit.
- 135-174 MHz receive.
- 100 memory channels
- Dual watch mode
- Power output with CBT156 dry cell battery case, 1.8 W.
- DTMF paging and coded squelch



**HRO
Discount Price
\$199.95**

C168A

2 Meter
C468A
440 MHz

\$489.95

Suggested List

- 144-147.995 MHz (C168); 438-449.995 MHz (C468) transmit
- 115-175 MHz (C168) 400-470 MHz (C468) receive.
- C168 receives (AM) Aircraft Band.
- Power output with standard battery 2.5 W.
- 5 watts at 12 Volts.
- External DC jack for 12V input.



**HRO
Discount Prices
C168 - \$349.95
C468 - 349.95**

Ultra-Thin

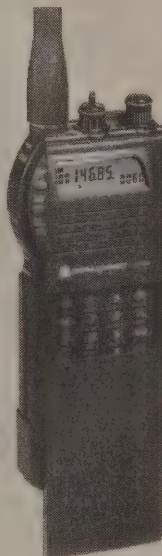
C288A

220 MHz Thin
Handheld

\$499.95

Suggested List

- 2.5 W with standard battery, 5 W at 9.6VDC.
- Ten 15-digit auto-dial memories.
- Advanced H.E.C. technology.
- Slide cover protects keyboard.



**HRO
Discount Price
\$359.95**

Dual Band

C178A

2 Meters and
440 MHz

\$459.95

Suggested List

- 144-147.995 MHz and 438-449.995 MHz transmit.
- 110-174.995 & 320-474.995 MHz receive.
- Power output with standard battery: 2 W (2 m).
- Programmable AM receive for aircraft.
- Ten DTMF 15-digit memories.
- DTMF Paging and Coded Squelch.
 - 2m: 5 watts at 12VDC.
 - 50 mW output on 70cm.



**HRO
Discount Price
\$399.95**

Standard Handheld Specifications

Model	Frequency	Power Supply	Power Out Transmit@	Current Transmit	Drain Receive	Sensitivity	Height in	Width in	Depth in	Weight oz
C108A	100-174.995 MHz †	3.0 VDC	.2W	.22 A		.158 µV 12 dB	3.15	2.28	0.98	4.9
C156A	135-174 MHz†	4-15 VDC	2.5 W	1.0 A	30 ma	.112 µV 12 dB	4.92	2.28	1.02	10.6
C168A	115-175 MHz †	7.2 VDC	2.5 W	700 mAh	38 ma	.158 µV 12 dB	4.9	1.8	1.2	10
C178A	110-174, 320-474.995†*	7.2 VDC	2.0 W	700 mAh	38 ma	.158 µV 12 dB	4.88	2.2	1.2	12.5
C288A	200-249 MHz †	7.2 VDC	2.5 W	700 mAh	38 ma	.158 µV 12 dB	5.8	2.3	1	10
C468A	350-474.995 MHz †	7.2 VDC	2.5	700 mAh	38 ma	.158 µV 12 dB	4.9	1.8	1.2	10
C508A	100-180,340-400,400-480 MHz †	3.0 VDC	.2W	.22 A		.112 µV 12 dB	3.35	2.28	0.98	5.65

† Transmit amateur bands only. Frequencies are for receive only *Am receive for aircraft @Higher power with optional batteries

VHF / UHF HANDHELDS

Twin-Band FM Handhelds

"Everyone loved it" ...QST - June 1991

QST even used the **C228A** as a reference to compare to other manufacturer's dual-banders!



HRO
Discount Price
\$449.95

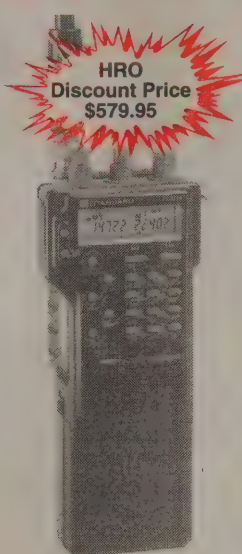
C528A

*Deluxe H/T with
2 Meters / 440 MHz*

\$495.95

Suggested List Price

- 144-147.995 & 438-449.995 MHz.
- 130-170 & 300-470 MHz receive.
- Power output with standard battery 2.5 W / 2 meters, 2.5 W / 440 MHz.
- Advanced design flex antenna.



HRO
Discount Price
\$579.95

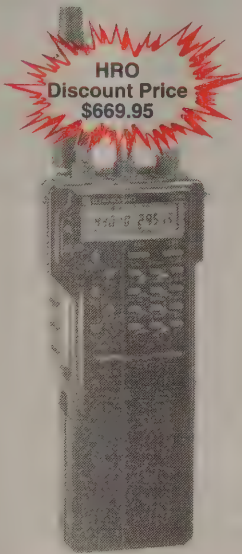
C228A

*World's only H/T with
2 Meters / 220 MHz*

\$695.95

Suggested List Price

- 144-147.995 & 220-224.995 MHz.
- 130-174 and 200-245 MHz receive.
- Power output with standard battery 2.5 W / 2 meters, 2.5 W / 220 MHz.
- Autodial up to 15 digits.



HRO
Discount Price
\$669.95

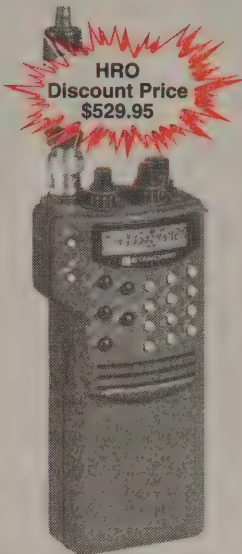
C628A

*Deluxe H/T with
440 MHz / 1.2 GHz*

\$727.95

Suggested List Price

- 438-449.995 & 1240-1300 MHz.
- 300-470 & 1240-1300 MHz receive.
- Power output with standard battery 2.5 W / 440 MHz, 1 W / 1.2 GHz.



HRO
Discount Price
\$529.95

C558A

*Super-Compact
2 Meters / 440 MHz*

\$689.95

Suggested List Price

- 144-147.995 & 438-449.995 MHz.
- 115-170 & 340-470 MHz receive.
- Receives (AM) aircraft.
- 2.5W/2m, 2.5W/440 MHz with standard battery
- Ten 15-digit autodial memories



HRO
Discount Price
\$599.95

C568A

*Compact Tribander
2 m/70 cm/1.2 GHz*

\$689.95

Suggested List Price

- 6 twin RX and TX configurations.
- Menu driven transceiver.
- AM programmable & auto detect for aircraft.
- Power output on 2M: 5 W, 2.5 W, or 350 mW.
- 40 memories.
- MARS and CAP mods available.

C228A / C528A / C628A

- Memory channels: ... 40 (20 +20 "limited") +2 call +2 vfo (non-removable memory unit). 40 (opt. 40- or 200-mem. units plug in).
- Sensitivity (ham bands): 0.158 μ V for 12 dB SINAD. 0.158 μ V for 12dB SINAD.
- NiCd battery pack: 700 mAh, 7.2 VDC standard! Other sizes optional. . 700 mAh, 7.2VDC std. (fits 228/528/628).
- Power output (12VDC): 5 W high, 2.5 W mid, 350 mW low (1.2 GHz: 1 W high). 5 W high, 2.5 W mid, 350 mW low.
- External input voltage range: 6.0 to 16 volts DC. 6.0 to 16 V. DC w/included CMA181.
- Battery Save mode: Also automatic power-off mode. Also automatic power-off mode
- Subaudible tone deck: CTCSS encode and decode standard. CTCSS encode / decode standard.
- Paging function: Also DTMF coded squelch. Also DTMF squelch, even w/CTCSS.
- Cross-band operation (full-duplex): Push-button control of cross-band repeat mode. P.B. control of Cross-band repeat.
- Twin-Band (not just dual-band): Receives on 1 band while transmitting on the other. RX 1 band while TX on other band.
- Scan function: 5 scan modes per band, each band is independent. 5 scan modes; 3 types on each band.
- Low current drain (Twin-band): 70 mA squelched receive, 32 mA battery save. 70 mA squelched RX, 25 mA batt.save.
- Even less current drain in single band mode: 36-45 mA squelched, 17-18 mA batt save. 36-45 mA sq., 17-18 mA batt.save.
- Cloning (duplicate program) over the air: Simply transmit to another C228 / 528 / 628A. Simply transmit to another C558A.
- Size (approximate, w/battery, w/o protrusions): 6.2" H x 2.2" W x 1.2" D. 5.1"H x 2.2"W x 1.2"D.
- Weight (approximate): 17 oz with battery and antenna. 12.5 oz with battery and antenna.
- MARS and CAP (copy of license required): Info available from Ham Radio Outlet. Info available from HRO.

C558A



STANDARD®

Presenting the most advanced,
highest quality radios available today!

Standard Handheld Accessories

Model	Description	C108A	C156A	C168A C468A	C158A	C188A C288A C488A	C228A C528A C628A	C178A	C508A	C558A	C568A	HRO Price
Microphones/Speakers												
CHP111	Headset/Boom Mic (PTT)	*	*	*	*	*	*	*	*	*	*	\$48.95
CHP150	Headset/Boom Mic (VOX AND PTT)	*	*	*	*	*	*	*	*	*	*	\$87.95
CMP111	Speaker Microphone	*	*	*	*	*	*	*	*	*	*	\$88.95
CMP113	Clip-on Submini Microphone with Earphone	*	*	*	*	*	*	*	*	*	*	\$48.95
CMP115	Mini Speaker Microphone	*	*	*	*	*	*	*	*	*	*	\$53.95
CMP123	Ear microphone								*		*	\$63.95
Memory												
CMU160	Extra 40-Memory Plug-In Unit (Swap in-and-out)			*						*		\$26.95
CMU161	200-Memory Plug-In Unit (Swap in-and-out)			*				*		*	*	\$48.95
CMU181	Extra 40-Memory Plug-In Unit (Swap in-and-out)					*						\$39.95
CMU182	200-Memory Plug-In Unit (Swap in-and-out)					*						\$48.95
Batteries, etc												
CNB150	Opt. Small NiCd, 7.2VDC, 400mAh				*		*			*		\$82.95
CNB151	Standard NiCd Batt, 7.2VDC, 700mAh				*		*			*		\$82.95
CNB151GY	Standard NiCd Batt, 7.2VDC, 700mAh									*		\$83.95
CNB152	Opt. High-Power NiCd Batt. 12VDC, 600mAh				*		*			*		\$99.95
CNB153	Opt. Long-Life NiCd Batt, 7.2VDC, 1000mAh				*		*			*		\$99.95
CNB155	Opt. NiCd Batt, 4.8VDC, 600mAh		*									\$30.95
CNB156	Opt. NiCd Batt, 6.0VDC, 600mAh		*									\$33.95
CNB157	Opt. NiCd Batt, 9.6VDC, 600mAh		*									\$42.95
CNB158	Opt. NiCd Batt, 6.0VDC, 1200mAh		*									\$44.95
CNB160	Opt. Small NiCd, 6VDC, 300mAh			*								\$72.95
CNB161	Standard NiCd Batt, 7.2VDC, 700mAh			*								\$78.95
CNB162	Opt. High-Power NiCd Batt. 12VDC, 600mAh			*								\$89.95
CNB163	Opt. Long-Life NiCd Batt, 7.2VDC, 1000mAh			*								\$95.95
CNB171	Standard NiCd Batt, 7.2VDC, 700mAh							*			*	\$109.95
CNC172	Opt 12V 600 mAh NiCd Batt							*			*	\$109.95
CNB173	NiCd Battery 7.2V 1100 mAh							*			*	\$99.95
CNB181	Opt. Small NiCd, 4.8VDC, 700mAh					*						\$104.95
CNB182	Opt. High-Power NiCd Batt. 9.6VDC, 600mAh					*						\$104.95
CNB183	Opt. Long-Life NiCd Batt, 6.0VDC, 1100mAh					*						\$97.95
CNB184	Standard NiCd Batt, 6.0VDC, 700mAh					*						\$64.95
CNB401	NiCd Battery Pack	*							*			\$22.95
CBT151	Alkaline Case, for 6 AA batteries				*		*					\$22.95
CBT151GY	Alkaline Case, for 6 AA batteries									*		\$22.95
CBT160	Alkaline Case, for 5 AA batteries			*								\$21.95
CBT171	Battery Case (6 cells)							*			*	\$21.95
CBT175	Battery Case (2 cells)							*				\$21.95
CBT181	Alkaline Case, for 4 AA batteries					*						\$18.95
CBT182	Alkaline Case, for 5 AA batteries					*						\$28.95
CAX160	Battery Separation Cable (Remote Battery Adapter)			*								\$39.95
Chargers, etc												
CAW150	Mobile 12 V Power Cable w/Lighter Plug			*	*	*	*	*		*	*	\$18.95
CAW151	12V Power Cable			*	*	*	*	*		*	*	\$14.95
CAW151B	12V Power Cable		*			*	*	*		*	*	\$18.95
CAW152	Mobile Cable, Lighter plug & Noise Filter			*	*		*	*		*	*	\$30.95
CAW152B	Mobile Cable, Lighter plug & Noise Filter		*							*	*	\$28.95
CCA160	Chg. Adapt., CBT160(NiCd's)to Wall Chgr. or CMC150			*								\$27.95
CMA181	Mobile 12 V Power Cable w/Lighter Plug (w/Adapter)					*						\$42.95
CMC150	Mobile Charger (not for 12VDC NiCd's or 9.6VDC NiCd's)		*	*	*	*	*	*		*	*	\$28.95
CSA181A	Peak-Detecting Auto-Rapid Desktop Charger			*	*	*	*	*		*	*	\$109.95
CSA181AB	Peak-Detecting Auto-Rapid Desktop Charger		*							*	*	\$109.95
CSA401A	NiCd Battery Charger	*										\$48.95
CWC156A	Wall charger (CNB155/156/158)		*									\$9.95
CWC151A	Wall charger (CNB157)		*									\$29.95
Cases, etc												
CAX02	Bottom Cover (pair)				*		*					\$12.95
CAX03	Bottom Cover			*				*			*	\$12.95
CBH160	Spring-Loaded Clip	*		*								\$12.95
CLC151	Std case for CBT151 and CNB151				*							\$25.95
CLC152	Large Case for CNB152 and CNB153				*							\$26.95
CLC157	Large Case for CNB157 and CNB158		*									\$23.95
CLC160	Small Soft Case (use with CNB160)			*								\$23.95
CLC161	Med. Case (w/CNB161 or CBT160)			*								\$23.95
CLC162	Large Soft Case (use with CNB162/163)			*								\$28.95
CLC171	Std case for CBT171 and CNB171							*				\$30.95
CLC172	Large case for CNB172 and CNB173							*				\$30.95
CLC181	Small Soft Case (use with 181 or CBT-181)					*						\$23.95
CLC182	Med. Case (w/CNB182/83/84 or CBT182)					*						\$25.95
CLC401	Standard Soft Case	*										\$16.95
CLC402	Deluxe Soft Case	*										\$23.95
CLC519	Deluxe Soft Case								*			\$25.95
CLC501	Med. Case (w/CNB151 or CBT151)						*					\$23.95
CLC521	Large Soft Case (use with CNB152/153)						*					\$29.95
CLC550	Med. Case (w/CNB151 or CBT151)									*		\$29.95
CLC551	Large Soft Case (use with CNB152/153)									*		\$31.95
CLC555GN	Pouch (Green)			*	*			*		*	*	\$34.95
CLC555OR	Pouch (Orange)			*	*			*		*	*	\$34.95
CLC560	Std carrying case (use with CBT171 and CNB171)										*	\$27.95
CLC561	Large carrying case (use with CNB172 and CNB173)										*	\$27.95
CMB111	Mobile Bracket			*	*	*	*	*		*	*	\$22.95
CMB112	Mobile Bracket		*	*	*	*	*	*	*	*	*	\$22.95

VHF / UHF MOBILES



C5718DA

\$849.95

Suggested List Price

**HRO
Discount Price
\$699.95**

This is the smallest, lowest price twin-band mobile to deliver all these features. Operate the C5718DA from its optional snap-on front panel with twin frequency display (CRC5700) or mount it under a seat or even in the trunk using the optional cable (CAW571 or CAW572). The C5718DA is packet ready with high-speed, 9600 baud and interface for both VHF and UHF bands. Just connect your TNC and you are on the high speed packet network. Also operates at 1200 and 2400 baud equally well.

- TX 144-147.995 and 420-449.995 MHz.
- Built-in antenna duplexer.
- Dual frequency receive: 2 VHF, 2 UHF or VHF / UHF.
- Extended receive frequency range: 110-199.995 MHz including AM aircraft and 250-499.995 MHz.
- Eight scanning options.
- 40 memories (20 per band) store frequency, offsets and tones. 200 memory channels with optional CMU182.
- CTCSS encode / decode standard.
- Full duplex cross-band operation with CTCSS tones. Paging and coded squelch.
- DTMF autopatch dialing.

Standard Mobile Accessories

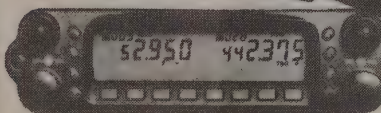
Model	Radio	Description	HRO Discount Price
CAW562	C5608DA/C1208DA	13 ft. extension cable remotes radio to trunk (mike w/LCD display allows full control)	\$48.95
CAW560	C5608DA/C1208DA	Dual microphone cable for second microphone (allows an additional operating position)	\$45.95
CAW561	C5608DA/C1208DA	6 ft. mic extension cable	\$36.95
CSK12	C5718DA/C5608DA/C1208DA	External extension speaker (necessary if trunk mounting the radio)	\$47.95
CRC5700	C5718DA	Removable front panel with twin frequency display	\$224.95
CAW570	C5718DA	Split cable for microphone	\$63.95
CAW571	C5718DA	2 meter microphone extension cable	\$49.95
CAW572	C5718DA/C1208DA	4 meter microphone extension cable	\$54.95
CAW573	C5718DA	2 meter extension cable for the front panel (CRC5700)	\$27.95
CAW574	C5718DA	4 meter extension cable for the front panel (CRC5700)	\$39.95
CAW575	C1208DA	Extra 12 volt power cable 15 ft	\$29.95
CAW576	C1208DA	Extra 12 volt power cable 9 ft	\$26.95
CAW590	C5900DA	Split cable for microphone	\$55.95
CAW591	C5900DA	3 meter extension cable for LCD display	\$40.95
CAW592	C5900DA	5 meter extension cable with connection for mic and speaker	\$57.95
CAW593	C5900DA	8 meter extension cable with connection for mic and speaker	\$74.95
CMU161	C5900DA	200 memory option module	\$48.95
CMU182	C5718DA	200 memory option module	\$48.95

**HRO
Discount Price
\$879.95**

C5900DA

\$1049.95

Suggested List Price



Standard's C5900DA is a compact, economical, full-featured tri-band mobile covering 2m, 70cm and 6m. It offers wireless remote control from your HT DTMF pad, 1200-9600 baud packet and cross band repeater operation.

- 80 memories (each side) store frequency, offset, CTCSS tones.
- Expandable 200 memories each side with optional CMU161.
- CTCSS Encode/Decode standard.
- Extended receive frequency range: 44 MHz to 1020 MHz (cellular blocked).
- Transmit on amateur bands. MARS and CAP modification available with permit.
- DTMF autopatch dialing, 12 memories, 15 digits.
- Eight kinds of scan include 1 MHz, entire band, program, memory, and tone.
- 7 priority hyper frequencies.
- Snap on front display or remote installation.
- Backlit keypad and display.
- Dual frequency display; Left side 6m, 2m and 70 cm. Right side 2m and 70 cm.
- Antenna triplexer built-in.
- 45 watts: 6 meter; 50 watts: 2 meter; 35 watts: 70 cm.

**All
Mobiles
Are Packet
Ready**



C1208A

\$529.95

Suggested List Price

**HRO
Discount Price
\$479.95**

This 2-meter rig fits anywhere, yet puts out a full 50 watts. With all controls and the large liquid crystal display in the speaker / microphone, this rig can be mounted under the seat, behind the dash, or in the trunk (with optional extension cable). All this plus it's packet ready (up to 9600 baud) and includes wide range (100-200 and 250-520 MHz) receive.

- Frequency range: transmit 144-148; receive 100-199.995 plus 250-519.995 MHz, FM or AM, and AM aircraft.
- Select power output of 50, 10, or 3 watts.
- 100 memories store frequency, offsets and CTCSS tones.
- CTCSS encode / decode built-in.
- DTMF auto dialing, 10 memories of 15 digits each.
- 6 modes of scanning including priority and CTCSS.
- Built-in quiet cooling fan.
- Mobile mounting bracket and 9-foot power cord included.



HRO
Discount Price
\$2899.95

FT-1000MP \$3699.95

Suggested List

Although this HF transceiver works in all modes (SSB, CW, FSK, AM, FM, Packet), it is optimized for digital communications modes. The enhanced digital signal processing (EDSP) system provides four random-noise reduction settings, selectable bandpass filtering with adjustable low and high cut responses, and transmitted audio enhancement. Also, an automatic seeking EDSP notch filter identifies and eliminates interfering heterodynes and carriers should they appear in the passband.

Two VFO knobs allow individual adjustments to the Main and Sub VFO's to provide in-band dual receive, even on different modes and bandwidths. The "Shuttle-jog™" tuning enhancement allows quick QSY up or down the band with a slight turn of the wrist.

Direct Digital Synthesizers (DDS) provide extremely fine tuning steps, thirteen of them, selectable down to 0.625 Hz per step. A full-featured contest memory keyer, provides CQ message generation along with contest numbers.

A lightweight switch-mode AC power supply is built in. And a high-performance high-speed automatic antenna tuner, with 39 frequency information memories, is built into every FT-1000MP.

Features include:

- General coverage receiver 100 kHz to 30 MHz.
- Power output 100 watts.
- Dual in-band receive with separate S meters.
- Collins mechanical filters: 455 kHz / 2.75 kHz SSB built in. A 455 kHz / 500 Hz CW is optional.
- Wide receiver dynamic range with separate, optimized FET RF; preamps for high and low bands.
- CAT system capability with built-in RS-232C level converter.
- Transverter jack for VHF/UHF operation (display indicates actual VHF or UHF frequency).
- Selectable antenna jacks. Separate receive-only antenna jack also included.
- Custom configuration via new menu system.
- Quick memory bank (QMB) system for instant recall of important memories.



HRO
Discount Price
\$4199.95

FT-1000D \$5459.95

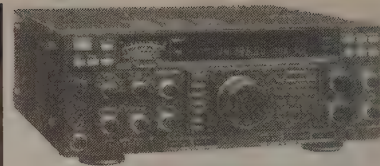
Suggested List

The FT-1000D was designed with the latest digital and RF technologies. It employs extensive surface-mount components, 6 microprocessors, and five Direct Digital Synthesizers all integrated into a reliable full-featured transceiver optimized for the serious amateur.

The FT-1000D includes these items as standard features: BPF-1 module for cross-band dual receive; TCXO-1 high stability oscillator; XF-C 2.4 kHz SSB filter; XF-D 2.0 kHz SSB Filter; and XF-E 500 Hz CW filter. Options are the XF-F 250 Hz CW filter; XF-455MC 600 Hz sub-receiver CW filter; and the DVS-2 Digital voice recording module.

Selected features include:

- General coverage receiver from 100 kHz to 30 MHz.
- All mode operation (SSB, CW, FSK, AM, FM, Packet). Optimized for digital communications modes.
- Built-in power supply for 110, 117, 220 & 234 VAC 50/60 Hz.
- Transmitter output is 200 watts. (50 watts AM).
- Receiver is quad-conversion with a 108 dB dynamic range.
- Special features for CW operation including CW spot, audio peak filter and variable IF bandwidth.
- Band pass filter BPF-1 module built-in on FT-1000D.
- Optional digital voice recording with the DVS-2 module.
- Simultaneous dual frequency reception. Each VFO has its own flywheel-weighted tuning knob.
- 99 memories storing frequency, mode, filter selection.
- CAT system allowing the radio to be computer controlled.



HRO
Discount Price
\$2199.95

FT-990 \$2759.95

Suggested List

Yaesu's FT-990 combines the basic technical features of its top-of-the-line rigs with recent advances such as a very quiet switching mode AC power supply and Yaesu's exclusive dual digital switched capacitance filters (SCF).

Major features include:

- Frequency coverage: Receive 100 kHz to 30 MHz. Transmit 160m to 10m amateur bands.
- Built-in high performance antenna tuner with 39 memories.
- RF frequency shifter speech processor.
- 90 memory channels.
- Full- and semi-break-in CW.
- Dual VFO's with band stacking.
- Multimode selection on packet/RTTY.
- Variable threshold noise blanker.
- Front panel RX antenna selection.
- Optional digital voice recorder (DVS-2).

The FT-990DC is also available: a 13.8 VDC version of the FT-990 with no-power-supply or CW filter.

FT-1000 \$4399.95

Suggested List Price - Call for Quotes

For the budget minded ham who wants a top-of-the-line radio, Yaesu offers the FT-1000. It has all the features of the FT-1000D except the BPF-1, TCXO-1, XF-C, XF-D, XF-E listed for the FT-1000D. Additional options available are the XF-F 250 Hz CW filter; XF-455MC 600 Hz CW filter and the DVS-2 Digital Voice Recording Module.

HF TRANSCEIVERS

FT-900CAT \$1819.95

Suggested List Price

**HRO
Discount Prices
\$1319.95**

NEW!



Now Includes Collins SSB Mechanical Filter

The FT-900CAT is a compact, affordable HF transceiver which features a detachable front panel that can be mounted separately from the main body. (A YSK-900 separation kit is required.) This allows you to configure the FT-900CAT for maximum safety, best display visibility and ease of operation in mobile installations.

Perfect as a high performance base station, the FT-900CAT quickly doubles as a full featured mobile or Field Day rig.

High Performance

The FT-900CAT puts out up to 100 watts power on all HF amateur bands in CW, SSB and FM modes, and up to 25 watts carrier in AM. General coverage reception is possible from 100 kHz to 30 MHz.

Detachable Sub-Panel

The lightweight, detachable sub-panel permits separating the transceiver and mounting the main unit in a remote location. This enables you to keep the most commonly used front-panel controls and display where you need them – in a comfortable and safe location. (YSK-900 separation kit required).

Multi-function Display

Operational settings are displayed on a high-contrast backlit LCD, which includes a three-mode bargraph meter with "peak-hold" segments that assist in tuning stations with fluctuating signal strength.

Improved CW Operation

The reverse-sideband feature switches the receiver carrier point (offset) to help sidestep QRM, and eliminates the need for retuning when switching between LSB and CW (convenient on 40 meters and below.) The adjustable BFO offset lets you match CW pitch to that used by most TNCs or multi-mode decoders. Properly tuned stations will be centered in the receiver IF passband for best copy. The internal electronic keyer has front-panel control of speed, weighting and mode (semi/full break-in).

High-Tech DDS Design

Twin direct-digital synthesizers (DDS) provide pure local signals and fast tx/rx changeover needed for QSK CW operation. A magnetic rotary encoder with selectable 2.5, 5, or 10 Hz tuning steps results in silent, silky-smooth tuning. Frequency accuracy and stability are assured by driving both DDSs from a single master oscillator. The optional TCXO-3 temperature-compensated crystal oscillator is also available for enhanced ± 2 -ppm stability for 0 to 50 degrees C.

The FT-900 receiver front end features a low-noise, high performance FET RF

amplifier feeding an active double-balanced quad FET ring mixer. The RF amplifier can be by-passed for direct-feed to the mixer (Intercept Point Optimization). For very strong signals a 12 dB attenuator can be inserted for clear copy.

Interference rejection is facilitated by an IF shift and notch circuit. Install the optional XF-100S crystal filter for enhanced SSB and AM narrow-skirt selectivity.

Four microprocessors in the rig are programmed to provide two independent (A/B) VFOs for each band (20 total) holding their own frequencies and mode settings. 100 memories store this information for both VFOs giving a total of 220 independent sets of information. All 100 or selected memories can be scanned and tuned. 10 special memories let you limit the tuning/scanning range.

Other features include a noise blanker, all-mode squelch, AF speech processor with adjustable IF offset.

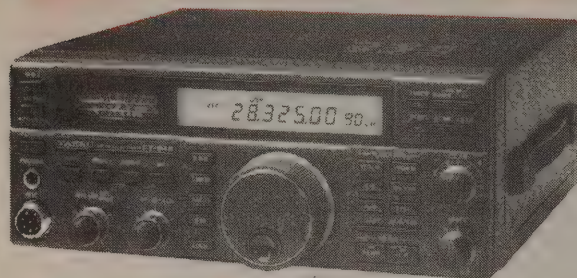
Internal Antenna Tuner

The internal ATU-2 antenna tuner has 31 memories which store the most-recent settings for quick recall. The external FC-800 can be remotely installed at the antenna feed point. The antenna tuner is controlled from the front panel.

Yaesu HF Specifications

Model	Frequency Range	Power Supply		Current Drain		Power Output					Receive Circuitry	Sensitivity 1.8-30 MHz †	RIT/XIT Range	Audio Output	List Price
		AC	DC	Xmit	Rec	AM	FM	SSB	CW	Mike Z					
FT-1000D	100 kHz - 30 MHz	117/234		1050 VA	95 VA	50 W	200 W	200 W	200 W	500-600 Ω	Quad Conversion	< .25 μ V	± 9.975 kHz	2 W	\$5,459.95
FT-600	100 kHz - 30 MHz	117/234	13.5 VDC	550 VA	80 VA	25 W	100 W	100 W	100 W	500-600 Ω	Triple Conversion	< .25 μ V		2 W	\$1,249.95
FT-1000MP	50 kHz - 30 MHz		13.5 VDC	20 A	1.2 A	25 W	100 W	100 W	100 W	500-600 Ω	Double Conversion	< .25 μ V	± 300 Hz	1.5 W	\$3,599.95
FT-990	100 kHz - 30 MHz	117/234	#	470 VA	60 VA	25 W	100 W	100 W	100 W	500-600 Ω	Triple Conversion	< .25 μ V	± 9.975 kHz	2 W	\$2,759.95
FT-900CAT	100 kHz - 30 MHz		13.8 VDC	20 A	1.2 A	25 W	100 W	100 W	100 W	500-600 Ω	Double Conversion	< .25 μ V	± 9.975 kHz	1.5 W	\$1,819.95
FT-840	100 kHz - 30 MHz		13.8 VDC	20 A	1.2 A	25 W	100 W	100 W	100 W	500-600 Ω	Double Conversion	< .25 μ V	± 1.25 kHz	4 W	\$1,099.95

The FT-990DC version operates on 13.8 VDC only. † Sensitivity measurements for 1.8-30 MHz SSB, CW



HRO
Discount Price
\$899.95

FT-840
\$1099.95
Suggested List

The FT-840 provides top-of-the-line quality at an affordable price. Just what you would expect from Yaesu—high-tech performance and a wealth of features that will not break your budget.

The FT-840 blends high performance digital frequency synthesis with the operating convenience and affordability of its predecessor, the FT-747GX. As a first time rig, backup, mobile, or main station transceiver, the FT-840 has the features and dependability that both beginners and seasoned operators appreciate.

Built to handle rigorous field operation, the new intense LCD display affords sharp visibility in bright sunlight. Die-cast heat sink and internal thermally switched fan keep the FT-840 running cool. Modular design circuit boards ensure operating efficiency with manufacturing excellence you would expect in higher priced radios.

For high performance, the FT-840 features a low noise front end that uses the latest in FET RF amplifier design. It has two DDSs and magnetic encoder for silent, smooth tuning and fast switching.

Twin band-stacking VFOs and automatic 10 m FM repeater offset with selectable CTCSS provide the best for 10 m repeater operation.

- General coverage receiver from 100 kHz to 30 MHz. Transmit on amateur bands 160-10m.
- Direct digital synthesis (DDS).
- FM repeater operation with automatic 10 meter repeater offset.
- Selectable CTCSS encode with optional FM-747.
- 100 memory channels (independent transmit / receive per memory).
- Twin band stacking VFO's.
- IF shift.
- CW reverse feature.
- Choice of two optional antenna tuners: FC-10 Matching External Tuner or FC-800 External Remote Tuner.



NEW!

FT-600
\$1249.95
Suggested List

HRO
Discount Price
\$899.95

The FT-600 is a compact HF base station that features the straight forward, sensible layout of a commercial radio with the most-often-used features on the front panel. The radio features a full coverage receiver from 50 kHz to 30 MHz with transmit on the amateur bands from 160 to 10 meters. It excels as an easy-to-use base station or mobile radio.

- Direct Digital Synthesis (DDS) and dual conversion receiver.
- 100 memory channels (4 banks of 25).
- Front mounted speaker with high audio output.
- Direct keypad frequency entry.
- Alphanumeric display.
- Selectable noise blanker.
- Dual watch on receive.
- Has all modes USB, LSB, CW, AFSK and AM.
- Transmitter output is 100 watts with 25 watts AM carrier.
- Has tuning steps of 10 Hz/100 Hz on CW/SSB and 100 Hz/1 kHz on AM.
- Accessories available include: FC-800 automatic antenna tuner, FIF-232C computer interface, FP-800 power supply and a complete selection of filters.

Broadband HF Antenna

YA-30 Dipole

The YA-30 broadband dipole antenna is designed to provide optimum performance over a wide frequency range. The usual requirements for multiple antennas or an antenna tuner between the rig and antenna are eliminated by the unique broadband design. Preassembled and pretuned, the YA-30 antenna can be installed in three different ways (horizontal flatop, inverted-V, or sloper). Specifications are shown in the chart below.

HRO Discount Price \$239.95	Specifications	
	Frequency Range	1.8-30 MHz (continuous coverage)
	Power Rating	150 watts P.E.P
	Input Impedance	50 ohms
	Commercial SWR	less than 2:1 fro 1.8 - 30 MHz
	Amateur SWR	less than 1.9:1 160 - 10m amateur band
	Antenna Length	83 feet
	Coaxial Feedline	100 feet of RG-8X with PL-259

HF ACCESSORIES

Meters



YS-60

\$139.95

Suggested List

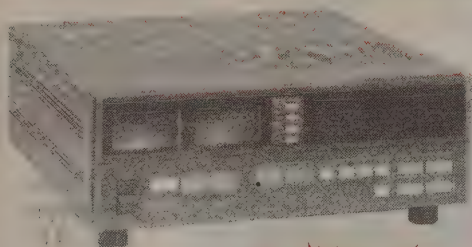
YS-500

\$119.95

Suggested List

Yaesu's in-line SWR / power meters monitor both average and peak transmitter power and voltage standing wave ratio (VSWR) of antenna systems in two way radio stations from 1.6 to 60 MHz (YS-60) or 140 to 525 MHz (YS-500). These compact meters can be located almost anywhere in the station. YS-60 requires 12 VDC for PEP operation.

HF Amplifier



FL-7000

\$2769.00

Suggested List

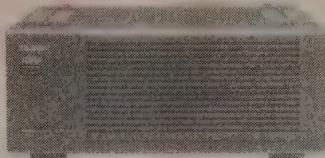
**HRO
Discount Price
\$2179.95**

Designed to match the Yaesu HF radios, the FL-7000 is a CPU controlled, full break-in, all solid state linear amplifier with built-in power supply and automatic antenna tuner. Power is up to 1.2 kW input on the amateur bands.

When changing bands or retuning the radios, the amplifier automatically retunes itself to match the SWR of the antenna. Tuner settings for each band are stored in lithium-backed RAM for instant recall without the need to transmit.

Up to four different antennas can be connected and automatically selected when the optional FAS-1-4R remote antenna relay is used. The amp covers 160 - 15 m and may be modified by the amateur for 10 m operation.

Power Supply



FP-800

The FP-800 is a matching AC power supply for the FT-900 and FT-840. It can also be used with the FT-990DC. Features include a large, front mounted speaker and internal cooling fan. The FP-800 is rated at 20 amps at 13.8 VDC. It operates on 117 or 220 volts AC input.

HRO Discount Price \$299.95

Remote Control

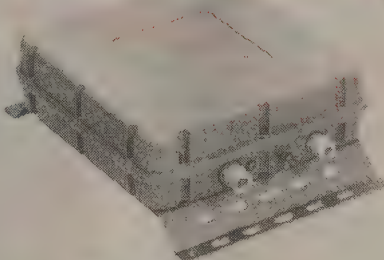
FH-1

Remote Control

The FH-1 is a remote control accessory designed to enhance the operating flexibility of your FT-1000MP. It permits remote control of the contest memory keyer, VFO/memory and main/sub VFO. It connects by a 3.5 mm miniature mono plug to the REMOTE jack on the rear panel of the FT-1000MP.

Call for HRO Discount Price

Antenna Tuner



FC-800

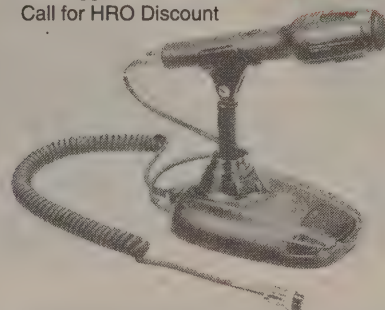
The FC-800 is an external remote mount, automatic antenna tuner especially designed for the FT-840 transceiver. The tuner is fully automatic and operations can be controlled from the front panel of the FT-840 for easy operations. The FC-800 has 30 memory locations for quick tuning. **HRO Discount Price \$489.95**

Microphones

MD-100 a8x

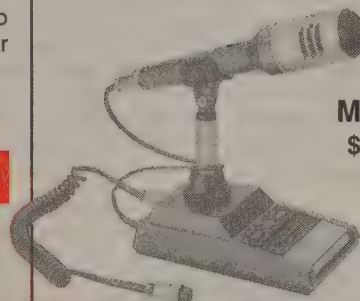
\$139.95

Suggested List
Call for HRO Discount



This desk microphone features selectable low-cut filtering and high-emphasis active filtering that allow you to tailor the microphone response for optimum voice clarity or DX punch. It has a large push-to-talk switch and latching button, along with a large rotary up/down, slow/fast control for scanning.

The MD-100a8x is especially designed for the FT-1000MP and the FT-900, but can be used with the following Yaesu HF transceivers: FT-747GX, FT-757GXII, FT-890, FT-840, and FT-1000.



MD-1C8

\$139.00

Suggested List
Call for HRO Discount Price

MD-1C8 is the optional desk microphone that will work with all current Yaesu radios. This unit comes with a desk pedestal and has up-down switches and a VOX lock.

MH-1B8

\$39.00

HRO Discount Price

MH-1B8 is the standard hand microphone that is provided with the FT-767GX, FT-757GXII, FT-747GX, FT-990, FT-650, FT-890, FT-1000 and the FT-736R.

This microphone has up-down buttons on the top of the unit for controlling the frequency of the radio.

FT-2500M

2 meters

\$459.95

Suggested List Price

**HRO
Discount Price
\$359.95**



The FT-2500M keeps all the great features of the popular FT-2400H and goes one better. The easy-to-operate front panel design has rubber coated knobs and a large amber display. The Yaesu exclusive 3-stage advance track tuning feature reduces intermodulation and front-end overload. The FT-2500M receives 140-174 MHz and transmits on 144-148 MHz. Power output is 50 / 25 / 5 watts.

Convenient features abound: The most often used controls are on the front and those you set and forget are neatly hidden behind a flip up panel. The DTMF microphone is backlit with either manual or automatic adjustment. The CTCSS encode is built-in. Both models come with automatic power off and time-out timer. There are 31 memory channels.

This powerful, rugged mobile is built as close to commercial grade performance as you get in amateur frequencies. A one-piece die-cast chassis and extra large heat sink add toughness. Yaesu brings you the only mobiles with military spec rating.

Accessories available include: FTS-17A, CTCSS decode unit; FRG-6, DTMF paging unit; SP-4, external speaker; and FP-700, power supply.



**HRO
Discount Price
\$529.95**

FT-7400H

70 cm

\$609.95

Suggested List Price

The FT-7400H takes full advantage of military grade mechanical and electronic construction techniques to bring you a rugged, reliable rig with up to 35 watts power output.

Some features: Backlit LCD display, knobs, and major buttons are automatically controlled by a photosensor. Less-often-needed front panel buttons have a flip-down protective cover. Thirty-one memory channels. Tuning steps are user-selectable from 5 to 50 kHz. 38-tone programmable CTCSS encoder is built-in as standard; decode unit is available as an option. Back-lit DTMF microphone is included.

NEW!

FT-3000M

2 meters **\$489.95**

HRO Discount Price



High Power

The Ft-3000M is the only 70 watt High Power mobile available with a new, true wide band-receiver. Rugged MIL-STD 810 rated with twin-fan cooling keeps the Ft-3000M running cool even during longer key down periods.

- 110-180, 320-520, 800-999 MHz Receive (cellular blocked).
- 70 watts high power (50, 25, 10 watts also).
- 81 memory channels.
- Keyboard or PC programmable with optional ADMS-2C (see page 29).
- Digital battery voltage display.
- Large, alphanumeric omniglow LCD display.
- DCS and CTCSS encode included.
- Backlit direct frequency entry DTMF mike included.
- Dual display with dual watch monitoring.
- Crossband repeat (UHF to VHF only).
- Accessories available are: FTS-27 CTCSS decode. FP-800 20 amp power supply. DVS-4 digital voice unit. SP-7 external speaker.

Portable All-Mode

FT-290R

2 meter

\$599.95

FT-690R

6 meter

\$729.95



FT-790R

70 cm

\$769.95

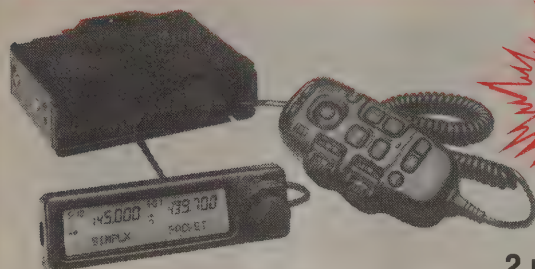
All Prices Are
HRO Discounts

The Mark II series of all-mode radios operates on 12 volts from your vehicle or, with the optional C-cell battery pack and shoulder strap, use the radio while on foot.

Includes SSB, CW, and FM; 10 memories, LCD display, memory of repeater shift and offset tuning for satellite operation. Great for camping trips.

MOBILE ACCESSORIES

Dual Band Mobiles



HRO
Discount Prices
8500/FS-10 \$679.95
8500/MH-39
\$669.95

FT-8500 2 meter & 70 cm

Yaesu demonstrates their leadership in 2-way radio design with the FT-8500 and its Smart Controller™ Microphone. This deluxe, compact transceiver defines "high tech" in mobile engineering. Just four simple flicks of the Smart Controller™ Microphone joystick-type control and you command frequencies, memories and every adjustment.

The smart mike isn't the only engineering advancement. Watch the Spectra-Analyzer™ display activity above and below your current operating channel. The DC voltmeter shows your car battery voltage. Work V+V, U+U or V+U frequencies. Selectable 1200/9600 baud and rear-panel data jack for packet.

- Frequency coverage: 2m receives 110-174 MHz and transmits 144-148 MHz; 70cm receives 420-500 MHz and transmits 430-450 MHz.
- 6 character alphanumeric display.
- 3-level auto mute with mute timer.
- Output power: 2m 50/10/5 Watts.
- On 70 cm 35 / 10 / 5 Watts.
- 9 memory DTMF autodialer.
- Cloning feature.
- 3 scanning modes, cross band and one way repeat.
- Choice of microphones: FC-10 or MH-39 DTMF mike.

HRO
Discount Price
\$549.95



FT-8000R – 2 meter / 70 cm \$699.95 — Suggested List Price

The FT-8000R is the first mobile to provide extended receive coverage that includes, among others, public safety, marine and weather channels. This compact dual band introduces innovative features in a user friendly, easy-to-operate format. Built to last, the rig brings together the most requested dual band features and an MIL-STD 810 rating.

- Super-wide receiver coverage accesses 110 to 550 MHz and 750 to 1300 MHz (with cellular frequencies blocked). Includes public safety, marine, and weather channels.
- Selectable output power from 50 watts on VHF to 35 watts on UHF. Choose 10 watts or 5 watts on each band.
- 110 memory channels (55 each band) store standard repeater shifts, CTCSS data, independent transmit and receive frequencies, packet baud rate and transmit power level.
- Alternating-Band Memory Scan (ABMS) for memory selections is able to alternate quickly between VHF and UHF memory banks.
- Dual receive, duplexer, cross-band repeat, DTMF autodialer.
- Ready for 1200 or 9600 baud packet.
- Optional accessory: ADMS-2 PC programming.

Microphone

MH-39

Option for FT-8500
\$79.95

HRO Discount Price

Order this compact mike to go with your FT-8500. It gives you complete control of the rig from your hand, including controls for the Spectra-Scope, menu, band select, on/off button, volume/squelch control, and user programmable buttons.



DC Noise Filter

LF-1 \$26.00

Suggested List Price

This filter, especially designed for mobile use, consists of a heavy choke coil to suppress alternator DC line noise. Install the filter between the battery and the radio. It comes with easy-to-use plug-in connectors. Model LF-1 has a continuous rating of 13A and an intermittent rating of 16A.

Programming Kits

ADMS-1C

FT-10/ 40/ 11/ 41/ 50 / 51

ADMS-2C

FT-3000 / 8000 / 8500

NEW!

Yaesu is pleased to announce another software first! Use the ADMS (Advanced Data Management System) with Windows to program the new generation of Yaesu's radios. Save different files for each city or state you visit.

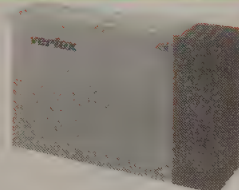
ADMS-1C programs the
FT-10/40/11/41/50/51R
HRO Price \$39.95

ADMS-2C programs the
FT-3000M, FT8000 and
FT-8500 mobiles.
HRO Price \$39.95

Repeaters

NEW!

Yaesu has two synthesized repeater models for amateur use.



VXR-5000V/TA-DC covers 135-148 MHz for 2 m.
VXR-5000U/TC-DC is for 440 MHz.

- PC programming with optional VX VPL-1 programming cable.
- 25 watts output at 100% duty cycle.
- 12 VDC at 7 amp power requirement.
- Fits 19 inch rack.
- Built-in CTCSS encode and decode.
- PC programmable hang and time-out timers.
- Includes DC power cable, 3.5" disk and service manual.

SWL Receiver



**HRO
Discount Price
\$599.95**

FRG-100B

\$739.95

Suggested List Price

This high-performance communications receiver provides general coverage reception in CW, SSB, AM and FM modes for 50 kHz to 30 MHz. Microprocessor control of major functions permits ease of operation and features that both new and seasoned shortwave listeners will appreciate.

Reception modes and most receiver functions are push-button selectable from the front panel. A back-lit LCD with adjustable brightness provides frequency read-out (down to 10 Hz) and important operating status.

Fifty fully-tunable memory channels store frequency, mode and filter selection, two additional memories provide band-edge information used in scanning. Selectable steps of 10 Hz, 100 Hz, 1 kHz are standard—other increments are user programmable.

Multi-function scanning (memory, band, selectable group, priority) with carrier or time-delay resume enables searching for new stations, or scanning within a known band. A special Broadcast Band selection mode permits instant selection of 16 pre-programmed international AM broadcast bands (LW, MW through 11 meters), convenient and instant QSY.

Features adjustable BFO, reverse BFO offset and selectable CW sideband. These prevent having to re-tune signals when changing modes and reduces adjacent signal interference. The optional 250 or 500 Hz crystal filter permits even further enhanced CW reception.

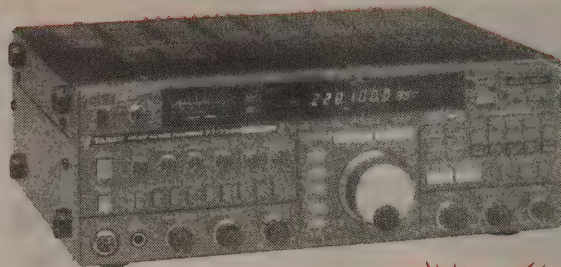
Adjustable SSB carrier offset, selectable AGC rate, noise blanker and all-mode squelch and RF attenuation controls are also provided.

Twin 12/24 hour programmable clocks with hourly time annunciator let you keep local time along with another time zone. The programmable On/Off Timer and Sleep Timer along with a remote control jack at the rear of the radio can switch auxiliary recording equipment at programmed times.

The Yaesu CAT system provides a direct link to the CPU in the FRG-100. This allows a personal computer with the Yaesu FIF CAT Interface Unit to add or customize functions such as automatic tuning and scanning as well as remote control of most receiver functions.

Options include: **FM Unit 100** FM Receiver Unit
TCXO-4 Temperature Compensated Crystal Oscillator

VHF / UHF Base



**HRO
Discount Price
\$1899.95**

FT-736R—Multi-Band

\$2449.95

Suggested List Price

Designed to meet the needs of the most demanding VHF and UHF operators, the FT-736R includes 144 and 430-450 MHz as standard. Optional units are available for 50 MHz, 220 MHz and 1.2 GHz.

User installable band modules provide 10 watts output on the 50 MHz and 1.2 GHz bands, and 25 watts on the other bands. This is **THE** radio of choice for satellite operation.

Operating features include IF shift and notch, noise blanker, all-mode VOX and 3-speed AGC. GaAs FET RF amplifiers in the modules above 430 MHz assure low noise and high sensitivity, and a TCXO reference oscillator meets the requirements of specialized UHF applications. One hundred general purpose memories, ten full duplex cross-band memories and five call-channel memories all store mode and receive and transmit frequencies independently.

Fourteen VFOs are provided: two general purpose plus one PMS (Programmable Memory Limit Scanning) on each band, two full duplex VFOs, and up to four clarifier memories. Each of the two full duplex VFOs can be selected so that its receive and transmit frequencies and modes can be displayed and tuned independently, or linked to tune synchronously in opposite directions for satellite operation.

Narrow FM mode reduces adjacent channel interference in crowded areas. Automatic repeater shift and a center tuning meter are useful for FM repeater operation.

A T/R switched DC supply provided for masthead preamps is activated from a front panel switch. AFSK input directly to the modulator is provided for high performance packet operation. The enhanced CAT system allows automation and customization by an external personal computer.

Power the FT-736R from 13.5 V DC or the AC mains through its internal switched mode power supply. Optionals include the TV-736 Amateur Television Modulator / Demodulator, an electronic CW keyer, and the FTS-8 Tone Squelch Unit. The MH1B8 microphone and 600 Hz CW filter are included.

**Call HRO's Friendly Staff of
Knowledgeable Hams**

DUAL BAND HANDHELDS

FT-51R
\$619.95

FT-51R / HP
\$639.95

2 m / 70 cm Dual Band

Suggested List Prices

The state-of-the-art FT-51R is so easy to use you won't need an operating manual. Its exclusive, scrolling instruction menu located in the large, backlit display "window" guides you through total operation.

You'll like some of the other features too. Spectra-scope™ displays real time, continuous scanning of activity on adjacent channels in VFO mode or 8 of your favorite memories. A cloning feature duplicates favorite channels to another FT-51R. It has digital battery voltage display, five power levels, the largest backlit dual band HT keypad made, Smart Mute™, and two VFOs on both VHF and UHF. It comes in 2-watt (FT-51R) or 5-watt (FT-51R/HP) models.

The optional MH-29A2B display mike allows you to control volume, memory access, VFO, call channel, band selection, and scanning functions.



HRO
Discount Prices
2 W-\$479.95
5 W-\$519.95

*Shown with
Optional
Speaker Mike*

Other features include:

- 5 power output levels from 20 mW to 5 watts depending on battery selection.
- Alphanumeric display; 8 characters per memory channel.
- NEW! ADMS-1 programming software available (see page 31).
- Built-in DTMF decoder displays 8 characters.
- Scanning light illuminates the display when a busy channel is found.
- 120 memories (80 with alphanumeric display) store alpha, CTCSS, offset, power level, and split information. Multiple scan modes have individual channel lock-outs.
- Built-in crossband and one-way repeat functions.

HRO
Discount Prices
2 W-\$329.95
5 W-\$339.95

FT-50 2 m / 70 cm Dual Band

2 W \$409.95

5 W \$419.95

Suggested List Price

NEW!

The FT-50R features wide band receive coverage up to 999 MHz (cellular frequencies blocked) with AM, FM-N and FM-W filters. CTCSS and Digital Coded Squelch are included. The HT can be keyboard or PC programmed with the optional ADMS-1C programming system (see page 31).

Other features include 112 memory channels each with offset, CTCSS/DCS and power level; up to 5 watts output; automatic tone search; digital DC voltage display and Auto Range Transpond System to poll other stations to see if they are in simplex range.



Yaesu Handhelds

Model	Frequency	Mode	Pwr Supply	Power Out	Current Transmit	Drain Receive	Sensitivity	Height in (cm)	Width in (cm)	Depth in (cm)	Weight oz (g)	List Price Call for HRO Discount Price
FT-10R	144-148 MHz #	FM	6.0 VDC	2.5 W*	1.2 A	200 mA	.16 µV / 12dB	3.9 (9.9)	2.3(5.8)	1.2(3.0)	11.5 (325)	CALL
FT-11R	144-148 MHz †	FM	4.8 VDC	1.5 W*	900 mA	16 mA	.15 µV / 12dB	3.9 (9.9)	2.2(5.5)	1.0(2.5)	9.5(280)	\$389.00
FT-11R-HP	144-148 MHz †	FM	9.6 VDC	5 W	1.5 A @ 5W	17 mA	.15 µV / 12dB	3.9 (9.9)	2.3(5.5)	1.0(2.5)	13.9(400)	\$399.00
FT-23R	144-148 MHz	FM	7.2 VDC	2 W*	900 mA	19 mA	.25 µV / 12dB	4.8 (12.2)	2.3(5.5)	1.3(3.2)	15(430)	\$277.00
FT-33R	220-225 MHz	FM	12 VDC	5 W	1.3 A	19 mA	.25 µV / 12dB	4.8 (12.2)	2.3(5.5)	1.3(3.2)	15(430)	\$369.00
FT-40R	430-450 MHz #		6.0 VDC	2.5 W*	1.5 A	200 mA	.16 µV / 12dB	3.9 (9.9)	2.3(5.8)	1.2(3.0)	11.5 (325)	CALL
FT-41R	440-450 MHz	FM	4.8 VDC	1.5 W*	900 mA	15 mA	.17 µV / 12dB	3.9 (9.9)	2.3(5.5)	1.0(2.5)	9.5(280)	\$479.00
FT-50R	2m/70 cm	FM	6.0 VDC	2.5 W*	1.5/1.6 A	200 mA	.16 µV / 12dB	3.9 (9.9)	2.3(5.8)	1.2(3.0)	11.5 (325)	\$409.00
FT-51R	2m/70 cm	FM	7.2 VDC	2.0/1.5 W*	900 mA	195 mA	.15 µV / 12dB	4.5 (12.3)	2.3 (5.5)	1.0 (2.6)	12 (330)	\$619.00
FT-51R/HP	2m/70 cm	FM	4.8 VDC	2.0/1.5 W*	1.6/1.9 A	195 mA	.15 µV / 12dB	5.7 (14.6)	2.3 (5.5)	1.0 (2.6)	16.4 (450)	\$639.00
FT-911	1240-1300 MHz	FM	7.2 VDC	1W	900 mA	150 mA	.2 µV / 12dB	4.8(12.2)	2.3(5.5)	1.3(3.2)	13(380)	\$569.00

* Power output can be increased depending on the battery pack selected † Extended receiver range and AM aircraft capabilities # Extended Rx range



FT-10R
2 meters

FT-40R
440 MHz

Call for HRO
Discount Prices

A multitude of exclusive features distinguishes the 2m FT-10R and 70 cm / 440 MHz FT-40R. Foremost is the choice of four keypads. These are the first ham handhelds with a MIL-STD 810 rating.

- 2.5 (FNB-40) or 5 (FNB-41) watts.
- Digital coded squelch encode / decode.
- Battery savers extend life.
- Compact, clamshell design, read mounted batteries.
- ARTS, Auto Range Transpond System.
- High audio output design.
- Alpha-numeric display.
- Optional PC programming.
- Dual watch.
- High speed scanning.
- Direct FM improves voice and packet performance.
- Deluxe models have 99 memories and automatic tone search.



**HRO
Discount Prices**
23R—\$299.95
33R—\$319.95

FT-23R
2 meters
\$309.95

FT-33R
220 MHz
\$339.95

Suggested
List Prices

Yaesu's original compact handhelds are still available. They offer the budget-minded amateur an attractive hand-held. Both models have LCD display with S meter.

- Up to five watts output with optional FNB-12S.
- Multiple scanning options.
- 10 memories with 7 storing odd splits.
- Aluminum alloy case with water resistant seals.
- Optional: CTCSS encode / decode (FTS-12) and DTMF pad (FTT-4).
- Auto battery saver circuit.



**HRO
Discount Price**
\$469.95

FT911
1.2 GHz

\$569.95
Suggested
List Price

This 1.2 GHz ultra-compact full-featured handheld offers features found previously only in larger units.

- 49 memories and 2 VFO's.
- Multiple scanning options.
- Uses the same battery packs as the FT-23 series. The FNB-17 is the standard pack.
- Rubber gasket seals offer protection.
- Standard CTCSS encode / decode included.
- Backlit keyboard and large LCD display.
- Automatic frequency control.
- DTMF encode pad with 10 auto-dial memories and direct key pad entry.
- Automatic power off system.
- VOX operation with optional YH-2 headset.



FT-11R
2 meters
\$309.95

FT-11R-HP
2 meters
\$329.95

FT-41R
70 cm
\$379.95

HRO
Discount
Prices

Yaesu's handhelds are easy to operate. The new FT-11R-HP is a high-power, 5 watt version of this compact handheld.

- New compact battery design—4.8 volts produces 1.5 watts output.
- Up/down volume/squelch controls are back-lit.
- Wide receive coverage on FR-11: 100-180 MHz, AM aircraft (110-136 MHz).
- 6 character alphanumeric display.
- MOSFET power module and TX/RX battery savers.
- 5 watts output with 9.6 VDC (optional battery required).
- Large full-sized back-lit DTMF keypad.
- 150 memory channels.
- Built-in DTMF paging/coded squelch.

FT-10R 2m HT Models

Model	Keypad	Channels	Digital Voice Recorder	Battery Pack	List Price Call for HRO Discount Price
FT-10R/40B-A06	6	30	no	FNB-40	\$309.95
FT-10R/41B-A06	6	30	no	FNB-41	\$329.95
FT-10R/40B-A16	16	30	no	FNB-40	\$299.95
FT-10R/41B-A16	16	30	no	FNB-41	\$329.95
FT-10R/40B-A16D	16	99	no	FNB-41	\$369.95
FT-10R/41B-A16D	16	99	no	FNB-41	\$379.95
FT-10R/40B-A16S	16	99	yes	FNB-40	\$389.95
FT-10R/41B-A16S	16	99	yes	FNB-41	\$399.95

Yaesu Handheld Batteries and Chargers

Battery	Voltage VDC	Rating mAh	Wall Charger	Desk Charger	Radio Series	HRO Price Battery Only
FNB-2	10.8	425	NC-9B		FT-208/708	\$49.95
FNB-4A	12	500	NC-18	NC-50	FT-727/109/209/709	\$64.95
FNB-12S	12	600	NC-18	NC-50	FT-23/33/73/411/470	\$71.95
FNB-14	7.2	1000	NC-34	NC-50	FT-23/33/73/411/470	\$59.95
FNB-17	7.2	600	NC-28	NC-50	FT-23/33/73/411/470	\$52.95
FNB-25	7.2	600	NC-28B	NC-50	FT-26/76/415/416/ 530/815/816	\$39.95
FNB-26	7.2	1000	NC-34B	NC-50	FT-26/76/415/416/ 530/815/816	\$55.95
FNB-27	12	600	NC-18B	NC-50	FT-26/76/415/416/ 530/815/816	\$62.95
FNB-31	4.8	600		NC-50	FT-11/41/51	\$55.95
FNB-33	4.8	1000		NC-50	FT-11/41/51	\$75.95
FNB-38	9.6	600		NC-50	FT-11/41/51	\$75.95
FNB-40	6	650	NC-60	NC-50	FT-10R/40R	\$48.95
FNB-41	9.6	600	NC-60	NC-50	FT-10R/40R	\$58.95
FNB-42	9.6	1100	NC-60	NC-50	FT-10R/40R	\$62.95

HANDHELD ACCESSORIES

Yaesu Handheld Accessories

Accessory	Model	10R 40R 50 R	11 41	51R	23R 33R 73R	26 76	209RH	103R 203R 703R	411 811 911	415 815	416 816	470	530	HRO Price
Headset/Boom Mike	YH-2				*	*	*	*	*	*	*	*	*	\$30.95
VOX Headset	VC-22		*											\$62.95
VOX Headset	VC-23	*												\$62.95
Speaker/Mike	MH-12		*		*	*	*	*	*	*	*	*	*	\$45.95
Speaker/Mike	MH-32		*		*	*	*	*	*	*	*	*	*	\$30.95
Speaker/Mike	MH-34A2B	*												\$30.95
Speaker/Mike Lapel	MH-19		*		*	*	*	*	*	*	*	*	*	\$30.95
Speaker/Mike w/Display	MH-29			*									*	\$99.95
Ear Piece Mike	MH-37A2B	*												\$30.95
Tone Squelch	FTS-6						*							\$35.95
Tone squelch	FTS-12				*									\$61.95
Tone Squelch	FTS-17A					*			std	std	std	std	std	\$47.95
CTCSS Decode	FTS-26											*		\$47.95
DC/DC adapter	PA-6				*				*			*		\$30.95
DC/DC adapter	PA-10A		*	*										\$82.95
DC/DC adapter	EDC-5B	*				*				*	*		*	\$26.95
Wall Charger 117 VAC	NC-9B						*	*						\$15.95
Wall Charger 117 VAC	NC-18B				*	*	std	*	*	*	*	*	*	\$14.95
Wall Charger 117 VAC	NC-28B				*	*			std	std	std	std	std	\$14.95
Wall Charger 110 VAC	NC-34B					*								\$14.95
Wall Charger 117 VAC	NC-60B	*												\$16.95
Wall Charger 220 VAC	NC-9C						*	*						\$17.95
Wall Charger 220 VAC	NC-18C				*		*	*	*	*	*	*	*	\$18.95
Wall Charger 220 VAC	NC-28C				*	*			*	*	*	*	*	\$26.95
Wall Charger 220 VAC	NC-34C				*	*			*	*	*	*	*	\$22.95
Mobile Charger	CD-2			*										\$99.95
Quick charger	NC-50	*	*	*	*	*			*	*	*	*	*	\$99.95
Battery 600 mAh 12V	FNB-12S				*				*			*		\$71.95
Battery 1000 mAh 7.2V	FNB-14				*				*			*		\$59.95
Battery 600 mAh 7.2 V	FNB-17				std				std			std		\$52.95
Battery 600 mAh 7.2 V	FNB-25					std				std	std		std	\$39.95
Battery 1000 mAh 7.2 V	FNB-26					*				*	*		*	\$55.95
Battery 600 mAh 12 V	FNB-27					*				*	*		*	\$62.95
Battery 600 mAh 4.8 V	FNB-31		*	*										\$55.95
Battery 1000 mAh 4.8 V	FNB-33		*	*										\$75.95
Battery 600 mAh 9.6 V	FNB-38		*	*										\$75.95
Battery 650 mAh 6.0 V	FNB-40	*												\$48.95
Battery 600 mAh 9.6 V	FNB-41	*												\$58.95
Battery 1100 mAh 9.6 V	FNB-42	*												\$62.95
Battery case	FBA-12					*				*	*		*	\$19.95
Battery case	FBA-14		*	*										\$19.95
Battery case	FBA-15	*												\$19.95
Battery case AA batteries	FBA-17				*				*			*		\$25.95
Cloning Cable	CT-27	*												\$10.95
Radio case	CSC-V10	*												\$27.95
Radio case FNB-11	CSC-38								*					\$19.95
Radio Case FNB-25	CSC-50									*	*			\$22.95
Radio Case FNB-26/27	CSC-52									*	*			\$22.95
Radio case FNB-25/FBA12	CSC-53					*								\$22.95
Radio case FNB-26/27	CSC-55					*								\$22.95
Radio Case FNB-25	CSC-56												*	\$22.95
Radio case FNB-26/27	CSC-58												*	\$17.95
Radio case FNB-41/FBA-15	CSC-68	*												\$16.95
Radio case FNB-40	CSC-69	*												CALL

NC-50 Charger Adapters

The NC-50 quick battery charger supports most Yaesu handheld batteries. An appropriate adapter will be required. The adapters and batteries supported are shown in the adjacent table.

Model	Batteries Supported	HRO Price
CA-7	FNB-12/14/17	\$27.95
CA-8	FNB-25/26/27	\$27.95
CA-10	FNB-31/33/38	\$14.95
CA-14	FNB-40/41/42	\$25.95

Look for Ham Radio Outlet on the Web
<http://www.hamradio.com>

And Use Our E-Mail:

West—Ken, K1ZKM: kdm@hamradio.com
 East—Chuck, KM4NZ: clw@hamradio.com



HF EQUIPMENT

HF Transceivers



SG-2000ADSP
\$2895.95
Suggested List Price

HRO
Discount Price
\$2499.95

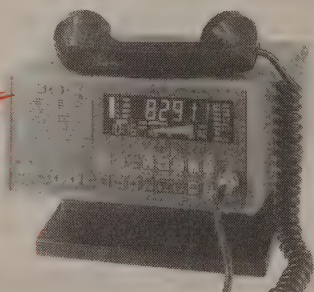
The PowerTalk™ SG-2000 packs advanced ADSP and SNS technology into a slim, state-of-the-art, control head. PowerTalk™ greatly increases signal clarity and drastically reduces noise, providing unsurpassed signal quality on the HF bands. You'll hear more and do more with SGC's precision tuning features.

An array of bright red and green LED's provides precise visual tuning of high, low, and center frequencies. Preset and user-programmable memories allow quick recall of ADSP, SNS, and high, low, center, and notch filter settings for easy operation. A high performance spinner knob gives you hands-on tuning.

PowerTalk™ features 644 ITU and ham frequencies including SITOR / AMTOR / PAKTOR telex channels permanently etched into memory, plus 100 user-programmable frequencies and easy Weatherfax connections. It has 150 watts of power, an extra-large, extra-bright LCD display, and the latest surface mount technology. PowerTalk™ is a no compromise HF-SSB power tool. **Note: This radio must be special ordered.**

HRO
Discount Price
\$1799.95

SG-2000
\$1995.95
Suggested List Price



Pictured
with
Optional
Handset
Microphone

The SG-2000 is a rugged commercial grade all-mode HF transceiver that provides 150 watts PEP output. 100 user defined channels can be set to ham frequencies. The transmit frequency range is 1.8 to 30 MHz; receive range is 500 kHz to 30 MHz.

The SG-2000 can be fully controlled by any standard RS-232 protocol connector. This allows easy implementation of all digital modes. The front panel can be removed to act as a remote head for mobile operation

For more information on this HF transceiver, contact HRO.
Note: This radio must be special ordered.

HF Amplifier

Call for
HRO Discount
Price

SG-500
\$1195.95
Suggested List Price



The SmartPowerCube produces tremendous power—nearly as much as a 1 KW amplifier—yet it requires less than one cubic foot of space. Electronic brain power makes it possible. The SG-500 is an intelligent, microprocessor controlled, high-powered linear amplifier, designed with high efficiency transistors. It constantly monitors your HF-SSB's activities, power needs, and antenna condition, and automatically—in less than 15 milliseconds—selects the right broadband filter. It can reliably produce, essentially unattended, in the most demanding conditions. Power supply required. SGC PS50 recommended to guarantee specifications. **Now available in export or domestic version.**

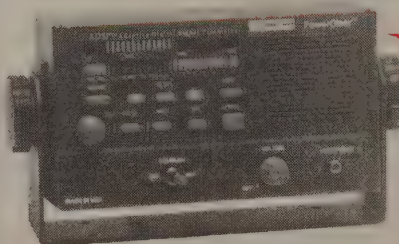
- Fully automatic band switching, 12 VDC.
- Input overdrive, over temperature, over current protection.
- Frequency coverage 1.8-24 MHz.
- Power output
SSB: 500 watts PEP
CW: 500 watts for 10 minutes; 500 watts continuous with fan
AM: 250 watts carrier maximum

Digital Signal Processor

HRO
Discount Price
\$299.95

NEW!

PowerClear™
\$395.95
Suggested List Price



Use the PowerClear™ control unit for enhanced signal clarity with any HF SSB rig. PowerClear™ is packed with advanced ADSP and SNS technology to greatly increase signal clarity and drastically reduce noise, providing unsurpassed audio signal quality. The listener will hear a remarkable improvement in SSB audio and increased intelligibility of signals.

PowerClear™ cuts out unwanted reception and interference from adjacent stations, allowing clear audio recovery. SNS digital circuitry analyzes the desired audio and undesired noise and automatically reduces the background roar. On digital signals, it automatically strips away interference. The unit has audio and visual fine tuning for swift interception of weak signals and 8 preset and 7 user programmable ADSP memories. The PowerClear™ can also serve as a preamplifier.

ANTENNA TUNERS

HF-SSB Automatic Antenna Couplers

SG-235



HRO
Discount Price
\$1499.95

SG-235
\$1595

Suggested List Price

The SG-235 is a fully automatic coupler for 500 watts that will tune an antenna at least 23 feet long for the HF bands. The SG-235 automatically evaluates and switches 64 input and 32 output capacitor combinations plus 256 inductance combinations in a pi network design. The tuner remembers the chosen frequency and tuning values and automatically reselects those values when transmitting on that frequency. Powerful in combination with the SG-500.

HRO Accepts the Following Credit Cards



SMARTPRO®

Enhanced HF-SSB Automatic Antenna Coupler for all Modes

\$999.95

Suggested List Price
Call for Quote

Everything our world-proven Smartuner® does so well, the new SmartPro® automatic antenna coupler does even better.

At its heart is the SG-230 tuner, with some significant enhancements including advanced tuning software and a more powerful and much faster microprocessor.

- Silent and manual tuning of complete networks via RS-232 and desktop/laptop PC computers with SGC Microtune™ software.
- Receiver pre-amp with 12 dB gain and remote control on-off.
- Free Smartlock™ and control software.
- Active, tunable antenna amplifier for RX-only purposes.
- 170 non-volatile memory positions.
- Smartlock® Pro included.
- Built-In-Test-Equipment (BITE) indicators.

SG-230



HRO
Discount Price
SG-230 \$499.95

SMARTUNER™

HF-SSB Antenna Coupler SG-230

\$550.95

Suggested List Price

QMS-II

Antenna Coupler System

\$1580.95

Suggested List Price
Call for Quote

The QMS-II is an HF antenna tuner that can be strapped to the side of your vehicle.

The package includes an SGC Smartuner™ automatic antenna coupler, an SGC-303 extended full range antenna, and the special exterior, waterproof, mounting package.

At first glance it looks a little unusual, but once you use it, you'll find an almost unbelievable jump in reception and transmitting range (3-20 dB). Mounting the tuner and antenna on the outside reduces engine noise and eliminates power draining antenna wire runs between the antenna and the tuner.

The QMS-II makes a typical HF-SSB perform like it's never performed before. Match it with a cutting edge SGC HF-SSB and it will blast through major mountain ranges. Power and focus are everything in HF-SSB rigs.

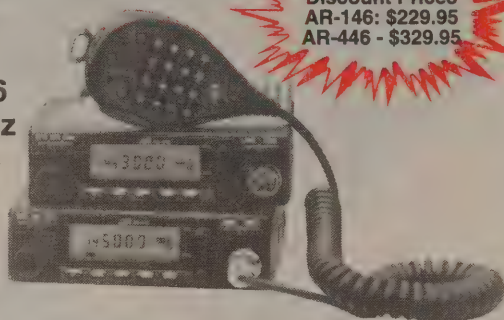
The Smartuner HF antenna coupler combines fully-computerized operation with a wide range of antenna matching possibilities. It is a versatile, clever, automatic device with quite surprising capabilities even on random wires. The Smartuner works with any HF rig.

- Tunes itself on an SSB signal. It does not need a constant carrier.
- Matches antennas from 2.5 to 27 meters long. A minimum length of 8 meters (25 feet) is required for 160 meter operation.
- Operates continuously from 1.8 to 30 MHz.
- Memorizes tuning which has already been done. There are 500 memory spots.
- The perfect addition to your marine-mobile installation.
- Tunes unknown antennas in just two seconds.
- Tunes a known antenna in milliseconds.
- Needs no bandswitching information, special low power tune-up or special wiring.
- 10 to 150 watts input power.
- Input impedance range is 45 to 55 ohms.
- DC operating voltage range is 10 to 15 VDC .9 amps.

2 m / 440 MHz Mobiles

AR-146
2 Meters
\$319.95

AR-446
440 MHz
\$345.95
Suggested List Prices



HRO Discount Prices
AR-146 - \$229.95
AR-446 - \$329.95

ADI Corporation offers two FM mobile transceivers for the ham operator: the AR-146 for 2 M and the AR-446 for 70 cm.

- 40 memory channels plus one call channel.
- Band scan, memory scan, program scan.
- DTSS with page function.
- 41 independent CTCSS memory setup functions.
- Programmable VFO.
- Multifunctional microphone with DTMF keys.
- 3-position RF output power control.
- 50 W maximum out for AR-146; 35 W for AR-446.
- Auto power off function.
- 30 minute time-out transmission timer.
- S-meter squelch.
- Dual watch operation.

Options include:
CTC 146 - CTCSS unit
DTS 146 - DTMF unit
SP 146 - External speaker

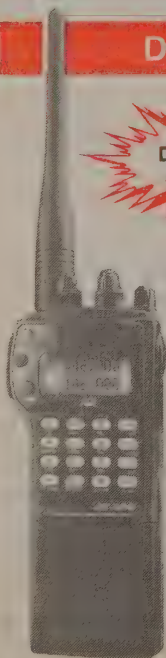
Dual Band Handheld

HRO Discount Price
AT-600 - TBA

NEW!

AT-600
Dualband Handheld
\$TBA

Suggested List Price



- Simultaneous reception on both 2m and 70cm.
- Crossband repeater function.
- Amateur transmit/receive coverage plus extended range reception. AM receive from 108-137 MHz (aircraft).
- MARS / CAP capable.
- 120 full data storage memories.
- Up to 5 W with 12 VDC battery.
- Clones other AT-600's and is PC programmable with optional software.
- CTCSS encoder / decoder built-in.

2 m / 440 MHz Handhelds

NEW!

2 Meters
AT-201 - \$229.95
AT-201-HP - \$249.95

440 MHz
AT-401 - \$239.95

Suggested List Prices



HRO Discounts
AT-201 - \$179.95
AT-201HP - \$209.95
AT-401 - \$199.95

ADI Corporation's new handheld line has all the features of the popular AT-200 & 400 plus many more.

- Extended receive coverage: the AT-201 transmits 144-148 MHz and receives 130-179 MHz. The AT-401 operates 430-450 MHz transmit and receive. By using a simple "keypad mod," the receive ranges extend from 100-179.995 MHz on the AT-201 and 400-480 MHz on the AT-401.

- 40 memories are soft-secured as 20 memories in each of 2 banks. Memories store any transmit offset and CTCSS tone.
- Automatic repeater offset is featured for quick operation. Just enter the desired frequency and plus or minus the standard repeater offset is selected.
- Full range or 1 MHz scanning is available.
- Memory group scanning allows scanning a 10 memory group or all 40 memories.
- The display will show either the channel or frequency.
- Can be cloned using a hardware key.
- Fully compatible with all AT-200 / 400 accessories.

HRO Discount Price
AT-200 - \$165.95
AT-400 - \$179.95

AT-200 **AT-400**
2 Meters **440 MHz**
\$199.95 **\$214.95**

Suggested List Prices



These handhelds have output power up to 5 watts using the optional battery or external 13.8 V power supply. The AT-200 transmits on the 2-meter band and receives 130-170 MHz. The AT-400 transmits on the 70 cm band and receives 400-480 MHz.

- 20 non-volatile memories.
- 16-digit DTMF tone pad with monitor.
- CTCSS encode / decode included.
- Programmable non-standard shifts.
- VFO / memory scan.
- Battery save; automatic power off.
- Dual frequency watch.
- Backlit LCD display and DTMF pad.
- One-touch open squelch check.

Handheld and Mobile Antennas

VHF / UHF Dual-band Antennas

NEW!

Premier's PNC-2 and PNC-4 dual-band mobile antennas feature the new two-way base fitting that mates directly with a regular UHF (SO-239) or NMO (Motorola-type) mount. The PNC-4 also has a fold-over feature.

Model	Description	HRO Price
PNC-2	Dual-band mobile, PNC mount, 3.5 dB, 140-165 MHz, 390-480 MHz	\$43.95
PNC-4	Dual-band mobile, PNC mount, fold-over feature, 3.5 dB, 144-148 MHz, 440-450 MHz	\$43.95
RD-8	Dual-band handheld antenna, 6.5" long flexible, gold plated BNC connector	\$17.95
RD-78	Dual-band handheld antenna, 15" long, 2.15 dB / 3.2 dB gain, flexible, gold plated BNC connector	\$22.95
RD-98	17" long, 1/16" diameter dual-band handheld antenna	\$24.95
AL-800	Dual-band telescoping antenna, telescopes to 34", collapses to 10." Whip replaceable with 9" "rat tail" (included), 3.2/5.5 dB gain	\$34.95

Base Antennas

VHF / UHF Dual-Band Vertical Antennas

The Premier line of base station antennas for dual band operation provides a number of options for the operation of 2m / 70cm rigs from your home base. All antenna models feature corrosion-resistant hardware: stainless steel u-bolts, aluminum bracket, chrome plated tip, and fiberglass radome.

Model	Description	HRO Price
A-200	6' tall. Designed for 140 mph winds. Wt 2.9 lbs. 4.5/7.2 dB gain.	\$86.95
A-300	11.5' tall. Designed for 125 mph winds. Wt 3.5 lbs. 6.8/9.3 dB gain.	\$129.95
A-1000	17.5' tall. Designed for 110 mph winds. Wt 5.3 lbs. 8.5/11.8 dB gain.	\$159.95

ANTENNAS & MIKES

Speaker Microphones



Premier's line of speaker microphones fits most popular HTs. The microphones use electret condenser elements especially designed to enhance American voices.

The SPM-500 throat microphone uses a special vibration pickup that eliminates external noises. The SPM-400 is an all-in-one earbud and boom mike requiring no headband or straps.

Model	Description	HRO Price
SPM-100	Speaker / mike for ADI, Icom, Standard, Yaesu	\$27.95
SPM-101	Speaker / mike for Kenwood	\$29.95
SPM-200	Lapel mike and earphone for ADI, Icom, Standard, Yaesu	\$18.95
SPM-201	Lapel mike and earphone for Kenwood	\$18.95
SPM-300	Speaker / mike for ADI, Icom, Standard, Yaesu. Includes on-mike volume control.	\$34.95
SPM-301	Speaker / mike for Kenwood. Includes on-mike volume control.	\$34.95
SPM-400	Earpiece with mini boom mike for ADI, Icom, Standard, Yaesu	\$25.95
SPM-401	Earpiece with mini boom mike for Kenwood	\$26.95
SPM-500	Throat mike and earpiece for ADI, Icom, Standard, Yaesu	\$59.95
SPM-501	Throat mike and earpiece for Kenwood	\$61.95

24 Hour FAX Order Numbers

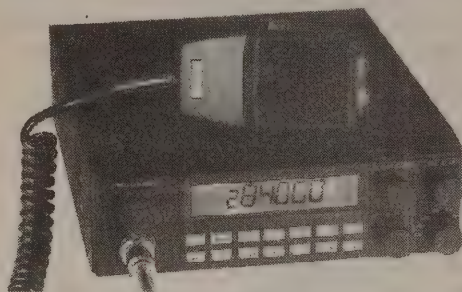
Anaheim	714-533-9485
Atlanta	770-263-9548
Denver	303-745-7394
New Castle	302-322-8808
Oakland	510-534-0729
Phoenix	602-395-1244
Portland	503-684-0469
Salem	603-898-1041
San Diego	619-560-1705
Sunnyvale	408-736-9499
Burbank	818-842-4973
Woodbridge	703-494-3679

MORE RADIOS: 10m / COMMERCIAL / AVIATION

10m Mobiles

RANGER Communications, Inc.

Choose from two Ranger 10 meter amateur transceivers. For low power use, the RCI-2950 with 25 watts PEP should be your selection. For those higher power requirements, the RCI-2970 100 watt unit is now available.



RCI-2950

\$449.95

Suggested List Price - Call for HRO Discount Price

Ranger's RCI-2950 is all you'd expect in a top-of-the-line amateur radio transceiver and more. Built to exacting specifications for reliability, it provides a wealth of features. It has full band coverage and all-mode communications. The ten most used frequencies can be pre-programmed for easy access. This is the perfect radio for 10 meter mobile use.

- Full band coverage 28.0 - 29.6999 MHz.
- All mode operation (USB, LSB, CW, AM, FM).
- Large, easy-to-read backlit LCD display with four-step LCD brightness control.
- Tuning steps 100 Hz; 1, 10, & 100 kHz, 1 MHz.
- CTCSS encoder / decoder (optional).
- Repeater offset switch with standard offsets.
- Built-in dual VFO.
- RIT for fine tuning up to ± 3 kHz.
- Noise blanker.
- Selectable programmable tone.
- Squelch eliminates background noise.
- Transmitter output of 25 W PEP for SSB, 12 W CW and 8 W AM / FM.
- RF gain control and RF power selector.
- Multi-function LCD meter shows transmit power, receive signal strength, modulation, and SWR.
- Receive sensitivity AM 0.5 μ V, SSB .15 μ V, FM .25 μ V.

RCI-2970

\$599.95

Suggested List Price - Call for HRO Discount Price

Ranger's newest 10 meter HF transceiver has similar performance and features to the RCI-2950. It provides 100 watts PEP output for ten meter amateur operations. This will be perfect as the band conditions decline. Dimensions: 15" long, 10" wide and 6.25" high.

Commercial



Radius®

Portable Two-Way Radios

SP-10 Single Channel Handhelds

Improve your bottom line through productivity by giving your work group handheld two-way radios. The Radius SP10 from Motorola will provide top-line performance no matter what the rigors of your working environment.

The SP10 is available in two synthesized models: a 1-watt, one channel, VHF model or a 2 watt, one channel, UHF model.

The handhelds fit comfortably in your palm. All controls are easily accessible on the top and side panels. They have an audio accessory connector for add-ons such as a remote speaker microphone, headset or earpiece.

These affordable two-way radios are designed to meet the basic communications needs of your business while keeping costs in line. Rentals are available on Motorola radios. Contact your HRO dealer for full details, configuration information, options and accessories.

**Call Toll Free
for HRO
Discount
Prices.**

Aviation



Icom's air band transceivers are perfect for portable use. These have the same superior design as their amateur radios.

IC-A22 Super Compact Portable NAV / COM

Call for HRO Prices



The compact IC-A22 is an aviation transceiver that features excellent audio quality on the COM side and a VOR transceiver with CDI function on the NAV side.

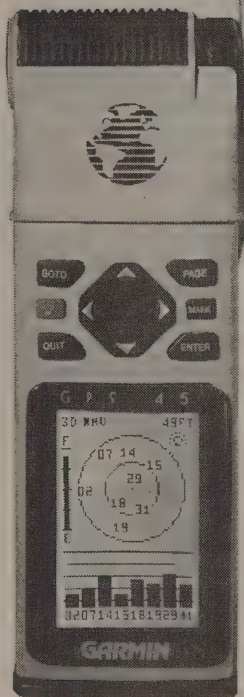
NAV features include:

- Display of radial heading TO and FROM VOR stations.
- CDI shows deviation from original course.
- 200 navigation channels.
- ABSS identifies direct radial to a VOR.
- Semi-duplex allows you to contact flight services while receiving VOR signals.

Ergonomic keypad provides convenient access to all functions. A rotary control allows quick tuning of all frequency and memory channels. This rugged radio has an alpha numeric display, built-in sidetone function, 50 memories, one-touch selection of the 121.5 MHz emergency frequency, scanning, VHF marine weather reception; 12-15 VDC power operation with optional power cord; 5 W output.

IC-A3 Airband Portable COM

This compact 760 COM channel airband transceiver provides easy access to all functions via its ergonomic keypad. A rotary control allows quick tuning of all frequencies and memories. The rugged IC-A3 has an alpha numeric display, built-in sidetone function, 50 memories, one-touch selection of 121.5 MHz emergency frequency, scanning, VHF marine weather reception; 12-15 VDC power operation with optional power cord; 5 W output.



GPS 45XL Personal Navigator

The industry's smallest GPS receiver, the GPS-45XL has changed marine navigation. Its rocker switch/keypad provides straight forward, simple operation.

Take a fix, plot a course, or plan a route on the large moving map display.

The GPS weighs only 9 ounces but is packed with features. The MultiTrac8™ uses up to 8 satellites for fast and accurate positioning. There are now 11 different grid and position formats. The rocker/keypad system allows room for a large, backlit LCD display with new fonts to enhance the easy-to-read characters and full-featured graphic plotting. The light weight ergonomically-designed case fits comfortably in the palm of your hand.

Graphic presentation pages for satellite status, position, compass, moving map plotting and CDI navigation offer intuitive guidance and user-friendly operation.

Other features include 250 alphanumeric waypoints, 20 reversible routes with up to 30 waypoints each, re-setable trip odometer and 12 or 24 hour clock and 10 to 20 hours of use from a single set of alkaline batteries. Includes a BNC remote antenna jack.

Optional accessories include mounting kit, power/data cable, cigarette lighter adapter, PC kit and remote antennas. Contact your nearest HRO for details. **HRO Price: \$299.95**



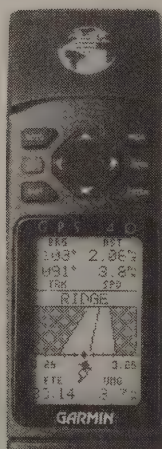
Garmin's Personal Navigator GPS receivers are low-cost and full-featured. This family of satellite navigation equipment can guide you anywhere you want to go.

GPS 38 Personal Navigator

The GPS-38 is a lightweight, proven receiver in a compact package – all at a very affordable price. The GPS-38 features an enhanced operating system that includes:

- EZinit for quick and easy first time initialization.
- Backtrack—an extension of the route feature that allows users to exactly re-trace their course.
- Compass navigation "page" that depicts a rotating compass dial, displaying a track-up indication of the direction you are heading.
- Redesigned moving map allows a larger presentation by only showing the information pertinent to that trip.
- Eleven user selectable grid formats.
- Improved screen readability.

HRO Price: \$229.95



GPS 40 Personal Navigator

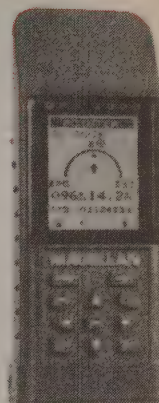
The GPS-40 can easily guide you anywhere in the world. The position page shows your present latitude, longitude and altitude, as well as your current track and speed. A graphic display indicates your cardinal

heading while you are moving. The moving map page also shows where you have been. The navigation page provides steering guidance to your destination. **HRO Price: \$249.95**

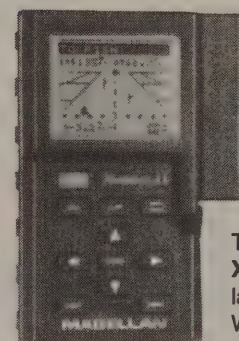
Magellan

GPS-2000

The **GPS-2000** is especially designed for the outdoor enthusiast. It is portable, affordable and easy to use. Its on-screen instructions make it easy even for a novice user. It features 4 navigation screens for your position, direction, speed, and progress. Use the plotter screen for the total picture. **HRO Price: \$199.95**



Meridian XL



The **Meridian XL** features the largest available WideScreen display in a compact hand-held GPS receiver. It has 6 graphic navigation screens and a full-featured tracker plotter that pans and scans. Reversible routing gets you back. **HRO Price: \$289.95**

Attention Internet Users

Look for Ham Radio Outlet
on the World-Wide Web.

[HamRadioOutlet's
HomePage](http://www.hamradio.com)

<http://www.hamradio.com>

Convenient
On-line Ordering
24 Hours Per Day

SONY



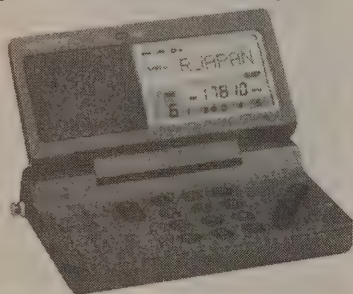
ICF-SW1000T

\$699.95

Suggested List Price

Here's a world band radio with a cassette player / recorder built-in.

- Has AM (LW/MW/SW), FM stereo, SSB
- Feather touch mechanism.
- Timer record capability with cue & review.
- Auto reverse and auto tape select.
- 10-key direct access tuning.
- 32 station memory presets.
- 1 kHz step tuning.
- Built-in clock with alarm / sleep functions.
- Dual standby functions.
- Synchronous detector circuitry.



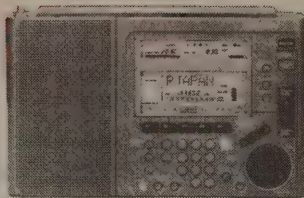
ICF-SW100S

\$449.95

Suggested List Price

The heart of this world-band radio system is a multi-band receiver the size of a cassette case. It weighs only 8 ounces with batteries. The kit provided includes a carrying case, active antenna, multi-voltage AC adapter and in-the-ear stereo headphones.

- Covers FM 76-108 MHz, 150 kHz to 29.995 MHz plus SSB.
- Access frequencies directly with key pad.
- 50 station memory presets.
- Band selector accesses SW bands.
- Auto-scan searches a band for signals and stops for 1.5 seconds.
- LCD has 24 city name/time display.
- Built-in clock with alarm and sleep timer.
- Two position tone control.
- Separate active antenna for better SW reception.
- Requires 2 AA batteries (not supplied) or power from the AC adapter included.
- Jacks for an external speaker, external antenna and DC in (3 volts).

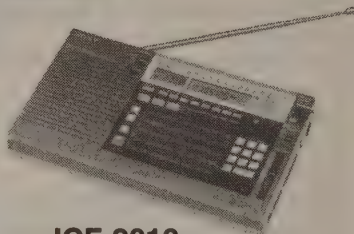


ICF-SW77

\$624.95

Suggested List Price

The ICF-SW77 is the step-up model of the popular ICF-2010. It has provisions for 150 station memory presets to find your favorite station quickly. For better tuning, the ICF-SW77 has 50 Hz tuning resolution. Enter the name of a station and it will display when the particular memory is selected.



ICF-2010

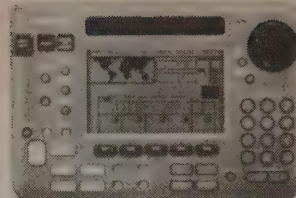
\$429.95

Suggested List Price

This popular portable SWL receiver is a super-compact world band radio that delivers fast direct access tuning with the utmost accuracy.

- AM coverage 150-29.999 MHz.
- FM broadcast band coverage.
- Dual PLL quartz frequency tuning provides stability and reduces drift.
- Built-in quartz clock and Sleep Timer with 15, 30 or 60 minute settings.
- Has BFO for receiving USB, LSB and CW.
- Instant recall of 32 station presets.
- Memory scan tuning samples preset stations.
- Automatic band scan gives a sample of each station on the selected band.
- Switchable IF bandwidth has "narrow" mode.
- Comes with the AC-DC adapter.
- The clock requires 2 AA batteries (not included). **These must be installed for the radio to work.**

**Call for HRO discounts
on Sony radios.**



ICF-SW55

\$429.95

Suggested List Price

The ICF-SW55 is the step-up model for the ICF-SW7600. It includes 100 station memory presets with the ability to display station name (up to 99 page labels). Tune with 1kHz resolution by rotary dial or 10-key Direct Access™. Step and scan tuning are also included. The ICF-SW55 features SSB reception for amateur voice and Morse code broadcasts. ROM memory eliminates the need for a battery backup. FM stereo reception is also featured. Know the time anywhere with the built-in world clock.



ICF-SW7600G

\$229.95

Suggested List Price

Explorers and travelers love this versatile World Band Radio® receiver with stereo FM reception and instant access to all channels and bands. The built-in clock timer has sleep and stand by functions.

- AM (LW, MW, SW) / FM stereo reception is provided over a wide range of frequencies from LW and MW to SW and FM.
- Dual-conversion superheterodyne circuitry on the shortwave bands provides high sensitivity and interference rejection.
- 10-key Direct Access™ tuning.
- PLL quartz synthesis tuning gives accurate, drift-free frequency selection.
- SSB circuitry for reception of voice and Morse code (CW) on amateur bands.
- Manual and automatic scan tuning provide easy frequency selection.
- The display is liquid crystal (LCD).
- Antennas include a built-in ferrite bar for MW and LW and a telescoping whip.
- A jack for easy antenna connection.
- A 3" speaker and high / low tone provides a wide range of sound for music or news.
- Requires 4 AA batteries (not included) or the optional worldwide AC adapter.

SWL RECEIVERS / ANTENNAS

SANGEAN



ATS-909

\$269.95

HRO Discount Price

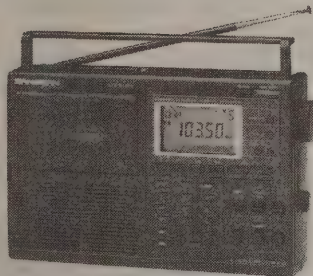
Sangean's ATS-909 is a full featured, portable SWL receiver.

- 306 memories—261 SW, 18 MW, 18 FM, 9 LW.
- 5 tuning methods.
- ATS Auto Tuning System.
- Auto SW Search.
- Manual editing to insert 8 alpha-numeric characters on the display.
- SSB (LSB and USB) with 40 Hz tuning steps.
- 3 individual timers.
- Direct key to recall your favorite station.
- Wide / narrow filter.
- Mono / stereo selector switch.
- Separate audio recorder output and standby control jacks.
- PLL dual conversion receiver with tone control.

ATS-818CS

\$359.95

Suggested List Price
Call for HRO Discount Price



Sangean's portable world band receiver with built-in cassette recorder offers more features and performance than many other table-top short wave receivers.

- Covers all SW bands from 120 m to 11 m.
- Dual time display.
- Has BFO for receiving SSB and CW.
- Covers FM broadcast band.
- Memories store your favorite frequencies.
- RF gain control.
- Features a clock alarm.

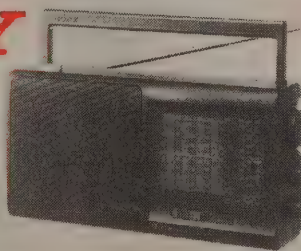
SONY



ICF-SW600

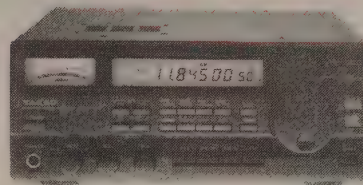
\$69.95

Suggested List Price



Sony now offers an Emergency Radio for the novice user. The user friendly ICF-SW600 12-band receiver has tone control, an LED tuning indicator, built-in transformer, portable AC/DC operation and a 4-inch speaker.

YAESU



FRG-100B

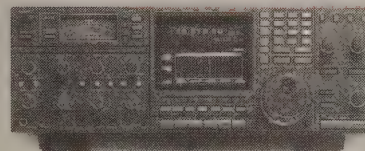
\$719.95

Suggested List Price
Call for HRO Discount Price

Yaesu's high performance receiver provides general coverage in CW, SSB, AM and FM modes from 50 kHz to 30 MHz.

- LCD display with 10 Hz read-out.
- 50 fully tunable memory channels.
- Selectable standard tuning steps plus user-programmable steps.
- Multi-function scanning.
- Adjustable BFO with selectable CW sideband.
- Optional FM unit and CW filters.
- Broadcast band selection mode.

ICOM



R-9000

\$7508.95

Suggested List Price - Call for HRO Discount

Notice: Federal and State Government Agencies
and Communications Customers Only

Icom's top-of-the-line receives 100 kHz to 1999.8 MHz*. Eleven bandpass filters use GaAsFETs for the VHF and UHF bands. Modes include: LSB, USB, CW, AM, FM, WFM (wide-FM) and FSK. The receiver has a multifunctional CRT display with spectrum scope to provide information on the status of the radio as well as incoming signals. It shows contents of the memories, dual clocks, weekly and daily timers, and frequencies of the dual VFO's. Dynamic range is 60 dB and sensitivity is approximately 1µV.

SWL Antennas

DYMEK

DA100E

The World's Most Respected
Short-Wave Active Antenna

Frequency Coverage: 50 kHz to 30 MHz, continuous.

Height: 4 feet 8" (142cm).

Output Impedance: Switch select 50, 100, or 500 ohms.

Attenuation: Switch selectable 0, 10, 20 dB.

Power Required: 110-120 or 220-240 VAC switch selectable, 50-60 Hz, 4 watts, or 12 VDC 0.4 Amp.

Dimensions: Antenna Module: 3.75"W x 4.375"H x 2"D (9.5 x 11 x 5cm).

Power Supply: 6.5"W x 3"H x 7.5"D (16.5 x 7.6 x 19cm).

Shipping weight: 9 pounds (4.1 kg).

HRO Price \$179.95

Antenna Supermarket

SWL Sloper

The Sloper covers SWL bands from 11-120 meters. Automatic band switching. SO-239 connector for attaching coaxial cable. **HRO Price \$79.95**

Eavesdropper™

This high performance trapped dipole for the 11-60 meter SWL bands is 42 feet long. Twin lead or coax models are available. **HRO Price \$79.95**

SONY

AN-1

Active Antenna

For the SW listener with space problems, the AN-1 has a frequency range of 150 kHz to 30 MHz. Has a low noise FET in the built-in preamp. Built-in attenuator. Requires 6 AA batteries or AC-12 adapter. Antenna can be used inside or outside. Comes with 39 feet of cable. **HRO Price \$99.95**

HRO
Discount Price
YB-400 - \$199.95

NEW!



Yacht Boy 400
\$269.95

Suggested List Price

The Grundig Yacht Boy 400 has the best digital technology provided in a digital world receiver.

Model 400 provides continuous coverage from 1.6 to 30 MHz in a compact package. It receives single sideband signals from amateur radio as well as military and commercial air-to-ground and ship-to-shore. It is excellent for the beginner to the advanced listener, especially for users needing a small radio with full features.

- Shortwave, AM and FM modes from 1.6 to 30 MHz. No tuning gaps allows all frequencies to be monitored including shortwave, AM, longwave and FM Stereo.
- 40 randomly programmable memory presets allow for quick access to favorite stations. The memory "FREE" feature automatically shows which memories are unoccupied and ready to program.
- The LCD multifunction display simultaneously shows the time, frequency, band, automatic turn-on, and sleep timer.
- Clock, alarm and timer features provide dual alarm modes (beeper and radio). Dual clocks show time in 24 hour format. The sleep timer is programmable in 15 minute increments to 60 minutes.
- Enter frequencies directly by using the front panel key pad and the radio will automatically select the correct band.

**You Will Find
SWL Frequency Guides
and Other
Informative Shortwave Books
on Pages 52 and 53.**



NEW!

Yacht Boy 305

\$159.95

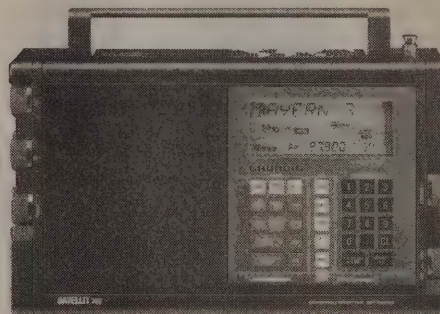
Suggested List Price

HRO
Discount Price
YB-305 - \$129.95

The Grundig Yacht Boy 305 is designed for those SWL listeners who are not interested in SSB, who do not require an alarm or clock and who are on a budget.

Model 305 provides continuous coverage from 2300 to 21850 kHz and utilizes the Grundig digital and phase locked-looped technology. It covers all existing SW bands plus FM stereo and medium wave.

There is a large cavity speaker enclosure for rich sound and 30 preset memories for building your own library of stations. The YB-305 features direct entry digital tuning, auto-scan and up or down slewing, telescoping antenna for FM and SW, a built-in ferrite core antenna for AM, external antenna socket, LED tuning indicator and tone control. Requires 2 C-cell batteries (not included). AC adapter is optional.



NEW!

Satellit 700

\$699.95

Suggested List Price

HRO
Discount Price
SAT-700 - \$499.95

The Grundig Satellit 700 is their most sophisticated portable world receiver. It features phase lock loop digital circuitry for continuous coverage of AM, FM, LW and SW (including LSB and USB) from 1.6 to 30 MHz.

The Satellit has 120 factory pre-programmed frequencies. There are 512 alphanumeric user-pro-

grammable memory positions which can be expanded to 2048 memories. It has selectable a wide / narrow bandwidth filter and a redesigned synchronous detector for improved reception. The multifunction LCD display shows time, frequency band, labels, clock and USB/SSB status. Features a built-in NiCad battery charger and a multi-voltage adapter.

SCANNERS

SWL Receiver

AOR

AR8000

All-Mode Receiver

\$799.95

Suggested List Price
Call for HRO Discount Price

NEW!

AOR has produced a new breed of receiver which combines full computer compatibility with advanced wide-band radio receiver technology.

Although it looks like a conventional handheld, the AR8000 is significantly different once you turn it on. You are greeted by a sign-on message on the LCD display. The receiver is simple to operate and comes with a complete, descriptive operating manual. It can be connected to an external computer for remote control.

The highly sensitive receiver covers 500 kHz to 1900 MHz continuous. Step size is programmable in 50 Hz increments for smooth tuning. All mode reception is provided for AM, USB, LSB, CW, NFM and WFM. An independent 4.0 kHz SSB filter is included.

The LCD is a new dot matrix design. It has four lines and may display signal strength and a band scope showing band occupancy. Two VFO frequencies may be displayed simultaneously, one with a standby frequency for quick transitions. Alphanumeric comments may be stored along with frequency, mode and attenuator status.

The microprocessor offers 1000 memory channels divided into 20 banks of 50 channels each. Special frequencies may be entered in the memories and recalled only after entering a "password." The AR8000 will search and scan at a speed of 30 increments per second.

uniden®

Handheld Scanners

BC-3000XLT

\$619.95

Suggested List Price
Call for HRO Discount Price

The continuous band coverage 3000XLT has 400 channels. It covers 25 to 550 MHz and 760 to 1300 MHz (except cellular bands). It has Turbo Scan and Search; 10 priority channels; AM, NFM and WFM modes; selectable attenuator, data skip, automatic store and sorting; flexible antenna; and rechargeable battery.



BC-80XLT

\$249.95

Suggested List Price
Call for HRO Discount Price

This fully programmable 800 MHz handheld scanner has 50 channels for programming: 11 bands in 5 banks. The LCD display shows the channels being scanned and the frequency for each channel. One touch weather allows quick access. Cellular bands are blocked. Operates with the included AC adapter or 4 AA alkaline batteries. NiCd rechargeables are available.



BC-230XLT

\$349.95

Suggested List Price
Call for HRO Discount Price

The compact 230XLT has 200 channels in 12 bands including aircraft (800 MHz blocked). It features twin turbo scan and search, programmed SVC search, unique skip data, and manual channel access. It has a LCD frequency display, one touch, and a rechargeable NiCd battery.



Mobile Scanner

BC-760XLT

\$499.95

Suggested List Price - Call for HRO Discount Price
This mobile scanner includes 800 MHz coverage except for cellular.

- 100 programmable channels organized in 5 scanning bands of 20 channels.
- Auto scanning of preprogrammed aircraft, police, marine and emergency services.
- Weather search, priority, squelch, lockout and delay.

Base Units



BC-9000XLT

\$599.95

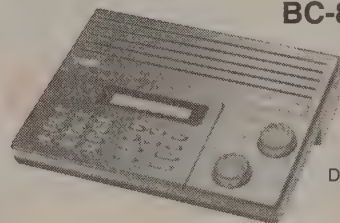
Suggested List Price - Call for HRO Discount Price

The 9000XLT provides 500 channels with continuous band coverage. It receives 25 to 550 MHz and 760 to 1300 MHz (except cellular bands). It has Turbo Scan and Search; 10 priority channels; AM, NFM and WFM modes; selectable attenuator, data skip, automatic store and sorting; automatic control tape ON/OFF, and tape output.

BC-860XLT

\$279.95

Suggested List Price - Call for HRO Discount Price

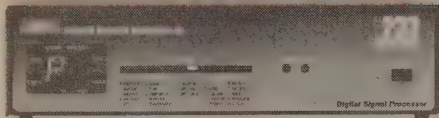


The BC-860XLT covers 12 bands with aircraft and 800 MHz (cellular blocked). It divides 100 channels into 10 banks of 10. Ten are priority channels for your favorites. Scans 100 channels per second. LCD display shows the channel and frequency being scanned. One touch access to the weather channels.

**HRO Is Your
Scanner Headquarters.
We Have Scanners,
Call Directories,
Antennas.**



HF / VHF DATA CONTROLLERS



DSP-232 Multi-Mode

\$495.00

Suggested List Price
Call for HRO Discount Price

The DSP-232 has two software selectable radio ports for **Packet**, **FACTOR**, **AMTOR**, **CW**, **RTTY** (Baudot & ASCII), **BPSK satellites**, and **NAVTEX**. There are 21 software selectable modems in all, including high/low tone pairs, three WeFax modems, and two satellite modems. **9600 bps Packet is standard**. AEA's SIAM™ Signal Identification and GPS firmware are built in. There is an internal connector for future hardware additions. This TNC won't become obsolete

AEA takes full advantage of the 32-bit host processor and fast DSP processor, converting analog signals to DSP data and then running the data to DSP modems. This provides superior filtering, so you can cut through noise and connect. You are no longer limited by slow 8-bit host processors and analog modems. The DSP chip is combined with hardware memory ARQ, hardware HDLC, and DCD state machine for increased performance. Built-in demodulator for **WeFax & ACARS decoding**. Three rear-panel AFSK level controls and a reset switch. Full PakMail™ mailbox with 32K RAM—expandable to 256K RAM. DAMA support included. WeFax with optional **AEA FAX III 900** software. HF and APT satellite WeFax with optional **AEA WeFax 256** software. ACARS decoding with optional **AEA ACARS 900** software.

Other AEA Equipment

KK-1 Keyboard Keyer Turns standard computer keyboard into a feature-packed Morse Machine. **HRO Price: \$189.95**

HamLink Remote control of your rig via Touch Tone™ telephone. **HRO Price: \$249.95**

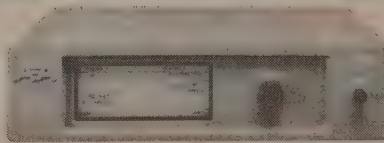
RadioLink Remote control of your rig via radio. **HRO Price: \$299.95**

ST-1 Satellite Tracker Hardware and software for automatic antenna tracking and radio tuning. **HRO Price: \$379.95**

IT-1 IsoTuner Antenna tuner for IsoLoop antenna. **HRO Price: \$249.95**

DM-1 Deviation Meter A deviation meter for 144, 220, and 440 transceivers. **HRO Price: \$149.95**

AEA APRS™ Cable Connects GPS and TNC to one computer COM port for APRS use. **HRO Price: \$30.95**

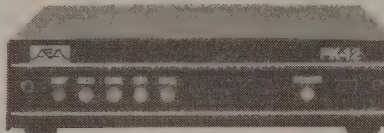


Dual Simultaneous Radio Ports

PK-900 \$569.00

Suggested List Price
Call for HRO Discount Price

The best non-DSP multi-mode controller available. Includes GPS firmware which features remote GPS access, stand alone tracking, and more! GPS firmware is GPS, Loran, ARNAV, and Ultimeter-II/2000™ weather station compatible. Has all the modes and features of the PK-232, plus more! It has dual simultaneous radio ports offering a true **cross-mode, cross-frequency Gateway** between radio ports. Full PakMail™ mailbox. Three processors provide superior analog signal filtering. Includes hardware memory ARQ, hardware HDLC, and DCD state machine. 9600 bps option board available. DAMA support included. Includes special demodulator for WeFax and ACARS decoding with optional computer software (AEA FAX III 900 & AEA ACARS 900.)



PK-12 – Packet TNC 1200 bps

32K RAM (15K Mailbox): \$134.00

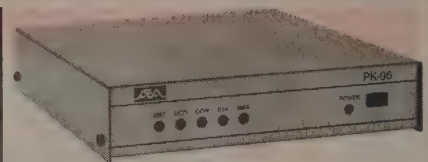
128K RAM (100K Mailbox):

Upgrade \$50.00

Suggested List Prices—Call for HRO Discounts

The PK-12 is a 1200 bps, VHF/UHF Packet TNC that is easy to use, offers powerful features, and is built with AEA quality. Use the full AEA command set, or select a simplified command set and move up when ready. We've even included the terminal control program **PC PakRatt Lite™** to make Packet easier for you!

The Global Positioning System capabilities let you use **APRS™ software** (which is included), interface with Ultimeter-II/2000™ weather stations, interface with GPS receivers, remotely program the TNC's GPS commands, and much more. **Can even run on a 9-volt battery** for mobile use. The PK-12 gives you 15K (32K RAM) of Mailbox space, expandable to 100K (128K RAM). Gateway firmware makes the PK-12 work as a Packet node. Identify TheNet, Net/ROM, and TCP/IP stations. Supports DAMA BBS networking protocol. Great in the shack or in your vehicle.



PK-96 – Packet TNC 9600 & 1200 bps

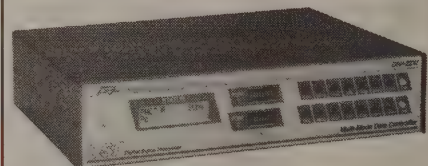
32K RAM (18K Mailbox): \$239.00

128K RAM (100K Mailbox): \$289.00

Suggested List Prices—Call for HRO Discounts

Includes all the features of the PK-12— even the two computer software programs and much more! You can operate at either **9600 bps** or **1200 bps** on VHF/UHF Packet. The powerful hardware included makes this a true speed machine.

There is hardware HDLC which reduces retries, state machine DCD circuit for hearing weak signals with an open squelch, and an **optional TheNet X-1J node** feature so Node Builders can add a 9600 bps port to their TheNet node stack easily. There are separate TX level adjustments for 9600 & 1200 bps, plus an external reset button. You can even use the **9600 bps FSK satellites!** **Every feature included in the PK-12 is also included in the PK-96, even the software.** The PK-96's performance shows AEA's commitment to quality engineering. Includes new DAMA protocol.



Digital Signal Processors

DSP-2232 MBX \$1100.00

DSP-1232 MBX \$850.00

Suggested List Prices
Call for HRO Discount Price

These two DSP controllers are satellite workhorses. The DSP-2232 offers an LCD display and dual simultaneous radio ports with cross-mode and cross-frequency Gateways. The DSP-1232 has two software selectable radio ports.

Both include all the modes and features of the PK-900 and PK-232, plus **satellite features and 9600 bps Packet standard.** There are **40 modem selections.** Some satellite modems included are: 400, 1200, 4800, 9600 eq bps for PACSATS and OSCAR, 9600 bps K9NG/G3RUH, analog FAX HF and APT, analog SSTV, 2400 bps DPSK. Includes **up/down Doppler** shift compensation for PSK modems and **up/down frequency stepping** to control the radio's frequency.

AEA Software – Power & Value



MacRatt III™ v. 1.0

This is AEA's newest control program for Macintosh computers. Works with all AEA data controllers. Separate windows for each TNC's parameters, MailDrop, and extensive help. Lets you run two AEA TNCs at once, operating all the modes the TNC is capable of. Requires Mac with System 6.05 or better. **HRO Discount Price: \$99.00**



Log Windows™ v. 3.0

Logging, rig control, and DX cluster monitoring with award tracking and reporting—it's all here and much more! Works with Windows '95, Windows 3.1, and Windows N/T. Compatible with PC PakRatt for Windows 2.0. Packet Cluster interface, works with any TNC. Other features include database browser, transceiver control, antenna rotator control, internal QSL manager, external interface for GOLLIST, and much more. Search logs by any criteria! Gives bearing & distance. Interfaces with Amateur Radio Callbook (Flying Horse), Amsoft, SAM, HAMCall, and QRZ. Award types: ARRL DXCC, WAS VUCC, and CQ Magazine's Zone and US-CA awards. **HRO Price: \$99.95**

KKCOM

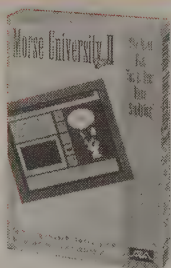
Optional control software for the KK-1 Keyer. **HRO Price: \$50.95**

Educational Software

Morse University II™

\$39.95

HRO Discount Price



This multimedia Windows product makes Morse Code practice fun. Start by learning the characters, numbers, and punctuation. Raise the speed as your ability increases. Practice copying real-world QSO's using the exercise feature. Use the built-in QSO's or send you own text file.

- FCC quiz section helps you focus on troublesome questions.
- FCC exam section gives you practice tests.
- Great for schools and clubs.
- Pentode™ game improves code speed.
- Requires PC compatible computer (386 or better), Windows 3.1 or Windows 95, 1.44 MB floppy, 2 MB of hard drive space, 4 MB RAM, VGA display, mouse and sound card for Pentode game.



AEA ACARS

Includes demodulator and computer software for decoding Aircraft Addressing and Reporting System (ACARS) communications. Decode departure times, cargo and fuel information, performance data, and maybe now and then "There's a cow on the runway!" Easy to set up and use. **HRO Price: \$90.95**

AEA ACARS 900: Software-only version for PK-900 and DSP-232. **HRO Price: \$50.95**

ACARS to FAX Upgrade: Software-only upgrade from AEA ACARS to AEA FAX III. **HRO Price: \$49.95**

PC PakRatt for Windows™ v. 2.0

Controls the entire line of AEA data controllers in the easy-to-use Microsoft Windows™ environment. Works with Windows '95, Windows 3.1, and Windows N/T. All modes of your AEA TNC are supported. Run two data controllers at once. Send and receive ANSI graphics in PACTOR and interface with Log Windows 3.0. Individual windows for mailbox and QSO logging. Separate parameter settings for different modes & data controllers. **HRO Discount Price: \$119.95**

PC PakRatt II™ for DOS v. 5.5

This DOS terminal control program is for the entire family of AEA data controllers. Split screen makes working the modes easy. On-screen help and full QSO logging. Includes PK-FAX program to display WeFax when used with PK-232MBX. **HRO Price: \$64.95**

AEA FAX III

Stand-alone gray scale weather fax demodulator and display software for IBM compatibles. 256 colorizing capability. Decodes WeFax, RTTY, NAVTEX, and CW. Capture images automatically even while you are away. All you need is an IBM-compatible computer, an HF receiver, and AEA FAX III to get the weather. **HRO Price: \$99.00**

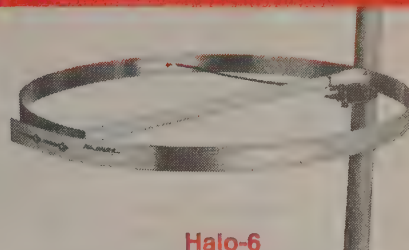
AEA FAX III 900: Software-only version for PK-900 and DSP-232. **HRO Price: \$129.95**

FAX to ACARS Upgrade: Software-only upgrade from AEA FAX III to AEA ACARS. **HRO Price: \$99.95**

AEA WeFax 256

For use with DSP-232, DSP-1232, or DSP-2232. Displays, in real time, gray scale images from the NOAA HF WeFax Service and NOAA APT Satellite Service. **HRO Price: \$119.95**

Antennas



Halo-6

The Halo-6 is designed for the new code-free Technician licensee who wants the experience of working real ionospheric skip DX on six meters. It will also allow the long time radio amateur to use his new multiband transceiver on six meters at the lowest possible cost. The Halo-6 uses a highly efficient loop design, is easy to assemble and mount, has a low radiation angle, is omni-directional, handles 750 watts, horizontal or vertical polarization, and low profile (27"). **HRO Price \$69.95**

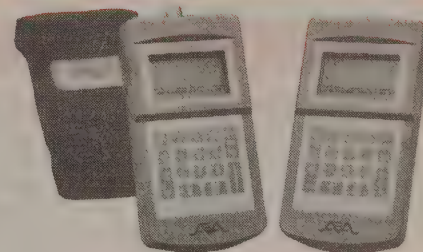
IsoPoles™

Omnidirectional vertical antennas for 144, 220, and 440 MHz have maximum gain attainable for their respective lengths and a zero degree radiation angle. Most of the signal is on the horizon. Mast not included. **Suggested List Prices—144: \$63; 220: \$63; 440: \$95**

Hot Rod Antennas

1/2 wave dipole telescoping antennas for handhelds. **HRO Prices – HR-1 (2M): \$29.95; HR-2 (220 MHz): \$29.95; HR-3 (450 MHz): \$29.95**

Test Equipment



SWR-121 Antenna Analysts

These compact, battery-powered units measure, compute, and present a graphic display curve of SWR versus frequency on a high resolution LCD display. See an antenna's performance over its entire operating spectrum, its center frequency, SWR, and return loss. All functions are controlled via the keypad. Has RS-232 interface for PC-compatibles.

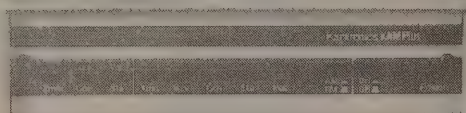
SWR-121 V/U (120-175, 200-225, and 400-475 MHz) **HRO Price \$399.95**

SWR-121 HF (1-32 MHz continuous) **HRO Price \$349.95**

AACOM Hardware and software links the SWR-121s to a PC compatible computer. Save and print plots. Control the unit from your computer keyboard. **Suggested List Price: \$75.00**

Kantronics

KAM Plus



Modes: HF Packet, RTTY / ASCII, AMTOR (476 and 625), CW, NAVTEX, Host Mode, Kiss Mode (TCP / IP), Gateway, Weather Facsimile (WEFAX), KA-NODE, PBBS (personal packet bulletin board), REMOTE Access, GPS, PACTOR on HF and G-TOR on HF.

PBBS can be accessed on Packet, Pactor or AMTOR Mode A (ARQ). PBBS supports Bulletin ID's forwarding and reverse forwarding, NTS traffic personal and bulletin messages.

Simultaneous operation of HF and VHF packet, KA-Node and PBBS is available while you use other HF modes. Host Master II allows simultaneous 1200 baud packet on VHF and any HF mode: RTTY, ASCII, AMTOR, CW, NAVTEX, PACKET, Pactor, or G-TOR.

Features include: Remote access (password protected) to all commands in the TNC from a second station. Full SYSOP access to the PBBS available from a remote station in packet mode.

Wide bar graph tuning indicator makes tuning HF signals easy. Reliable, fast-acting AGC eliminates the need for a manual threshold adjustment. Preprogrammed 170, 425, and 850 Hz shifts. User definable shift (mark and space tones). Selectable CW bandwidth and center frequency.

Automatic generation of unique 7-character (CCIR 625) selcal of your amateur call sign. Copy the ARRL bulletins using NAVTEX mode to prevent duplicates.

Software

Host Master II+ for Macintosh or IBM

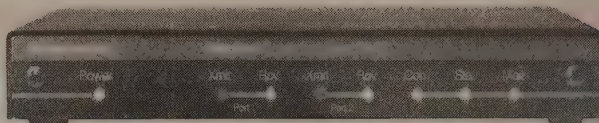
This terminal program provides a great way to carry on a packet conversation (or several), monitor what else is happening on the channel, and keep everything separate. Plus, with the KAM, work any HF mode (except WEFAX) at the same time.

The Monitor Window displays all incoming packets allowed by the TNC monitor commands. The Packet Receive Window area is actually many windows on top of each other, one for each stream, and a command window. Use PgUp and PgDn keys to go to the next channel (window) or use ESC for the command window.

The XmitEcho window shows characters as they are transmitted by an HF mode. What you receive from a mode other than packet displays in the non-packet receive window. The transmit window shows what you type and has many windows to coincide with the receive windows. Receive and transmit windows keep your conversations separate and will capture each to its own disk file.

Host Master requires Kantronics Host Mode. Simultaneous multi-mode support for the KAM requires firmware version 5.0.

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty.



KPC-9612 Dual-Speed, Dual-Port TNC

The FCC-certified KPC-9612 is a true dual-speed dual-port TNC capable of 9600 and 1200 baud QSOs at the same time, even if cabled to only one radio. With both ports connected to one radio, the KPC-9612 automatically detects the speed of the incoming signal and transmits at 9600 or 1200 baud. No hardware changes are required to switch speeds, regardless of configuration. It will function as a network node and a TNC at the same time.

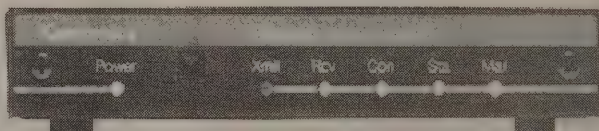
The KPC-9612 is available with either 32K or 128K RAM and can be expanded to 512K. The full-featured PBBS includes forwarding and reverse forwarding to a BBS, remote sysop access and mail-waiting LED. A 9600-ready radio is required for 9600 baud operation. GPS capabilities. The NET, NET/ROM compatible with the optional K-Net.

For its small size and low power requirements, this is an amazingly full-featured packet TNC ideal for both the new and experienced user.

KPC-9612 v. 7.0 Transmits and Receives Pager Signals

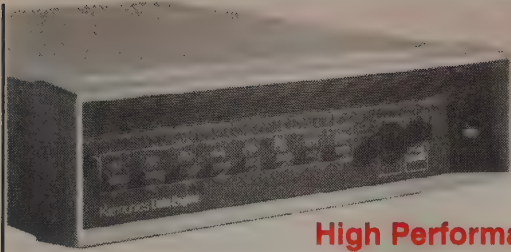


Kantronics has updated the KPC-9612 firmware, now V7.0, to monitor 512 and 1200 bps numeric and alphanumeric RPC1 (POCSAG) paging messages. V7.0 also supports page transmissions and a packet paging server. Ten new paging commands are added. Users may connect to MYPAGE @ 1200 or 9600 to initial a page. A Pagerlog and Pagebook may be established in RAM, assisting the sysop in maintaining and the remote operator in using the paging server. Pagerlog logs all pages sent and Pagebook stores call signs and pager capcode pairs. Paging operations required a 9600-like "data ready" transceiver which attaches to the 9600 port of the KPC-9612.



KPC-3 VHF / UHF TNC

The KPC-3 is a small-sized, low-power packet TNC designed for the new user. The simplified command set allows you to start quickly, and then switch to the full Kantronics command set when you are ready. The KPC-3 supports GPS. Operating on 6-25 volts DC, requiring less than 40 milliamps, this unit is perfect for portable or other low-power applications. The KPC-3 comes standard with 32Kd RAM, but can be expanded to either 128k or 512k bytes. It supports WEFAX with an optional special program. TheNET, NET/ROM compatible with the optional K-Net. **Updated eprom in the KPC-3. Versions 5.1 and later now feature an enhanced mailbox and expanded KA-Node capability.**



Data Engine

High Performance TNC

The Data Engine is a dual-port packet Terminal Node Controller (TNC) with each port capable of speeds greater than 56 kB (depending on the modem installed). As shipped from the factory, Port 1 has a 1200 baud modem (DE1200) installed and Port 2 is open for whatever you desire: DE19K2 / 9K6, PSK satellite modem, G3RUH 9600 baud modem, TexNet modem, another DE1200 modem, or one of your design. Port 1 can also be used for any of these modems. Configure your Data Engine to your needs.

The Data Engine is based on a V40 processor with a 10 MHz clock, and uses an 85C30 SCC for hardware HDLC. The EPROM and RAM sockets allow up to 1/2 Megabyte of firmware and 1/2 Megabyte of RAM. Eight V40 controlled front panel LEDs and two dead front windows make this an ideal platform for the experimenter. The open architecture allows development to meet future packet needs, aided by the optional Firmware Developer's manual and optional Modem Developer's manual.

Standard firmware includes end-user AX.25, Kantronics Host Mode, KISS mode, BBS mode, PBBS and Gateway. The G8BPQ Packet Switch code turns the Data Engine into a multi-port network node. Data Engine is compatible with today's packet and is designed to adapt to future applications.

DE 19K2 / 9K6 Internal Modem

The DE 19K2 / 9K6 modem is capable of either 19200 baud or 9600 baud (G3RUH compatible) operation. Configured for 9600 baud from the factory, this modem is fully compatible with the popular G3RUH modem, using independent transmit and receive scramblers for full duplex capability.

Select 19200 baud operation for use with the Kantronics D4-10 radio by moving four jumpers. This mode uses the same 17 bit LFSR scrambler and provides direct TTL output to the D4-10 radio for plug-n-go 19200 baud packet.

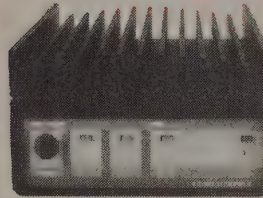
DE1200 Internal Modem

The DE1200 modem is a standard 1200 baud packet modem that has three keyboard selectable carrier detection schemes: sine-wave, energy, and external. When sine-wave is selected, carrier is detected by the presence of audio sine waves (packet tones). Selection of energy defines the carrier detect as any received signal. External relies on the carrier detect of your transceiver. This modem has jumpers for output level, equalization, watch dog timer and interfacing to hand-held radios.

DE Jumper Board

For ease of use with other manufacturer's modems, the DE jumper board installs on the modem disconnect headers of the Data Engine and provides the signals required by most external modems to the rear panel DB-15 connector. TxD, RxD, RTxC, DCD, TOUT2 and GND are always present. TRxC CTS and DTR are jumper selectable. The on-board PTT circuit and watch dog timer may be disabled by on-board jumpers.

VHF / UHF Amps



VHF1-60

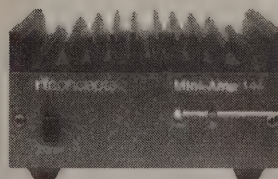
Given 1 to 8 watts input, this amp's sensing circuit detects an HT's output power on 2 meters and automatically switches the amp in-line for a full 60 watts output. It provides a 2 meter discriminator to eliminate false keying by out-of-band signals, a high VSWR LED indicator, ALC output power control to protect against antenna mismatches, transmit LED, and thermal shutdown. With a dual-band HT, 70 cm (440 MHz) power is passed on to the antenna without amplification. The VHF1-60 measures 5x9x3 inches and uses 13.8 VDC at less than 14A.



MaxAmps

MaxAmps for 2 m features a solid state pre-amp and new heat sink design. These amps will boost your 10-watt signal to 150+ W output.

Mini-Amps



Mini-Amps are perfect for 2 m and 70 cm HT's. Amps for both bands are available producing 10 or 15 dB gain. Accepts 1 to 6 watts in. With 2 watts in, the Mini-Amp 144 will output 20 watts; 3 watts in will result in 30 watts. Each amp weighs only 1.3 lbs. Requires 5A at 13.8 Vdc.

GaAs-Fet Receiver Preamps

Most rf concepts amplifiers feature automatic keying, thermal protection, VSWR shutdown, GaAs-Fet preamps and flow soldered assembly. All solid-state. Made in U.S.A.

Call for HRO's Discount Prices

Dual Band 2m / 440MHz

RFC 2/70G (with preamp)
RFC 2/70 (no preamp)
143-149: 5 W in = 30 out
430-450: 5 W in = 20 out

144-148 MHz 2 meters

RFC 2-23: 2 W in = 30 out
MaxAmp 10: 10 W in = 150+ out
MaxAmp 45: 45 W in = 150+ out
VHF 1-60: 5 W in = 60 out
*Mini-Amp 144: 2W in = 30 out

220-225 MHz

RFC 3-22: 2 W in = 20 out
RFC 3-211: 2 W in = 110 out
RFC 3-112: 10 W in = 120 out
RFC 3-312: 30 W in = 120 out

430-450 MHz

ATV compatible
RFC 4-32: 3 W in = 20 out
RFC 4-110: 10 W in = 100 out
RFC 4-310: 30 W in = 100 out
*Mimi-Amp 440 3W in = 20 out

* "P" Models include preamp

Kantronics Prices

Call for HRO's Discount Prices

Model	Suggested List
Data Engine (1 Modem)	\$379.95
DE 19K2/9K6	\$109.95
DE 1200	\$89.95
DE Jumper Board	\$21.95
Enhancement Board	\$109.95
KAM Plus	\$339.95
Host Master II+ (PC)	\$79.95
Host Master II+ (MAC)	\$79.95
KPC-3 w/ 32K RAM	\$119.95

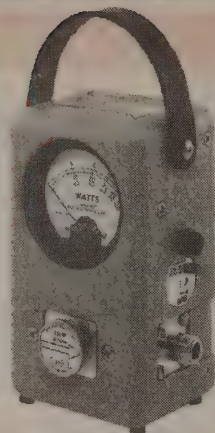
METERS

BIRD

Model 43 Directional Wattmeter

This low-cost Thruline Directional Wattmeter has a history of reliability, durability and flexibility. It is a well engineered, portable insertion-type meter that measures forward and reflected CW power in coaxial transmission lines. It gives accurate RF power flow readings under any load conditions.

Model 43 is comprised of a line section and a direct-reading 3 scale meter in a rugged, corrosion-resistant aluminum case. Quick Change (QC) type connectors and a full range of plug-in measuring elements are available. (See the chart for the most popular elements. Others are available on special order.) Store two extra elements in the housing. The shock-mounted 30-microampere meter has 3 expanded scales of 25, 50 and 100 unit calibrations. It comes with type SO-239 QC connectors, but others are available. Please specify when you order.



Model 43P Peak Reading Wattmeter

The Model 43P is a peak-reading version of the popular Model 43. The peak reading option has been installed in one of the spare element holes on the side of the meter. The meter reads CW with the switch out and PEP when the switch is in. Requires a 9 VDC battery. The frequency range and power levels are determined by the element used. No special elements are required. The meter comes with SO-239 QC connectors installed. Others are available.

Accessories

The most popular wattmeter accessories are:

- CC-1 Meter case. Space for 6 elements.
- EC-1 Element case. Space for 12 elements.

PEP Modification Kit Model 4300-400

Your existing Bird 43 meter can be upgraded to a PEP reading meter. Order the 4300-400 modification kit. Easy installing procedures are included for most versions of the Model 43.

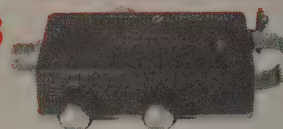
Bird Standard Elements

Power	2-30 MHz	25-60 MHz	50-125 MHz	100-250 MHz	200-500 MHz	400-1000 MHz
5 watts		5A	5B	5C	5D	5E
10 watts		10A	10B	10C	10D	10E
25 watts		25A	25B	25C	25D	25E
50 watts	50H	50A	50B	50C	50D	50E
100 watts	100H	100A	100B	100C	100D	100E
250 watts	250H	250A	250B	250C	250D	250E
500 watts	500H	500A	500B	500C	500D	500E
1000 watts	1000H	1000A	1000B	1000C	1000D	1000E
2500 watts	2500H		2500B	2500C		
5000 watts	5000H					
10000 watts	10000H					

Noise Bridge

Palomar Engineers

R-X Noise Bridge RX-100



The R-X Noise Bridge tells you whether or not your antenna is resonant. If not, it tells you whether it is too long or too short. It works with dipoles, inverted vees, quads, Yagi beams, multiband trap dipoles, and verticles. Frequency range is 0 to 100 MHz. On multiband trapped antennas, you can adjust each band. Use it to measure coax, tune your antenna tuner, test a balun, and check tuned circuits. Since the RX-100 uses your receiver, it is much more accurate than a grid dip meter. **(Warning! Do not transmit into the RX-100. The unit will be damaged.)** HRO Price \$79.95

Watt Meters

RF Applications

RF Applications watt meters have a VSWR alarm that will drop out an amplifier under high VSWR conditions.

P-3000

HF Digital Watt Meter

A remote coupler design with a power rating of 15 to 2950 watts and a VSWR from 1.0:1 to 19:1. **HRO Price \$299.95**

P-2000A

HF Digital Watt Meter

Uses a combination of digital microprocessor technology and analog panel meters. Has an expanded VSWR scale and settable VSWR alarm. Covers 1.8 to 30 MHz up to 2000 watts. **HRO Price \$299.95**

P-100A

Digital Watt Meter

Display and control functions are similar to the P-2000A. Uses coaxial line sections and sensor elements from Bird® or Coaxial Dynamics® to measure power and VSWR over a wide range of power and frequencies. **HRO Price \$239.95**

P-1500

HF Digital Watt Meter

Has a built-in coupler designed for 1.8 to 30 MHz with a power rating of 15 to 1500 watts and a VSWR from 1.0:1 to 19:1. **HRO Price \$219.95**

VSWR Monitor

MatchAlert™



Match Alert™ offers economical protection for HF transmitting systems. The microprocessor-based monitor gives a visual and electrical alarm if a preset VSWR level is exceeded. Eight levels are dip-switch selectable. Match Alert covers 1.8 to 30 MHz and is rated at 3000 watts. Requires 11 to 16 VDC. A power supply is not provided. A form-C relay contact rated at 1 ampere is available via a three foot wire harness. **Suggested List \$129.95.** Call for the HRO Discount Price.

P-1

HF Wattmeter

with Serial Interface

Measures power and VSWR from 1.8 to 30 MHz. The values are accessible via an RS-232 serial interface. **HRO Price TBA**

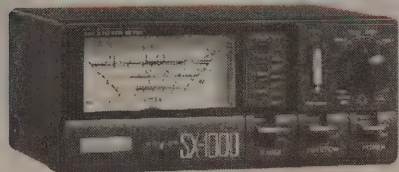
P-2000CW

HF Audible Wattmeter

Provides power and VSWR measurements from 1.8 to 30 MHz. The measurements are reported in Morse Code. Adjust CW speed 5 to 40 wpm, and normal or abbreviated CW is selectable. Tuning modes make VSWR and power optimization simple for the sight impaired operator. **HRO Price \$249.95**

SWR / WATT METERS

DIAMOND



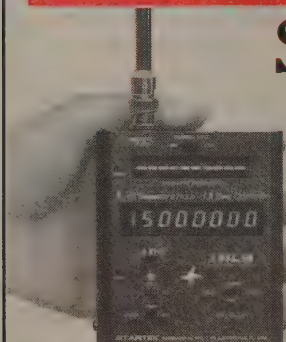
The Diamond RF SWR / wattmeters cover the complete range of amateur applications.

- Illuminated meters. Require 12 volts DC.
- Low insertion loss generally less than 0.2 dB in HF range and 0.3 dB at higher frequencies.
- Power measurement accuracy is generally $\pm 10\%$ on the higher power ranges and $\pm 5\%$ on lower ranges.
- Some have remote sensors for power pick-up.
- Low loss SO-239 connectors are used except for the high frequencies as noted in the table.
- Measurements are forward power, reflected power, SWR &, on selected frequencies, PEP monitor.

Model	Freq MHz	Power Ranges	Connectors	HRO Price
SX-100	1.6-60	30/300/3KW	SO-239	\$149.95
SX-200	1.8-200	5/20/200	SO-239	\$109.95
SX-400	140-525	5/20/200	SO-239	\$129.95
SX-600	1.8-160 140-525	5/20/200	SO-239	\$199.95
SX-1000	1.8-160 430-450 800-930 1230-1300	5/20/200	SO-239 Type N Type N Type N	\$249.95
SX-9000	4 Band Automatic See SX-1000	5/20/200	Same as SX-1000	\$399.95

Frequency Counters

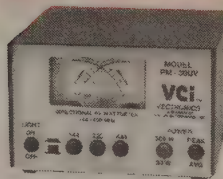
Startek International



Startek's ATH™ series brings you auto trigger and hold in a pocket sized frequency counter. Super fast circuitry reads and holds a signal in less than one-tenth of a second.

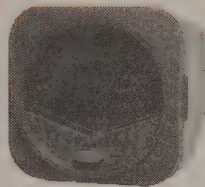
Model	Description	HRO Price
ATH10	1-1200 MH w/Auto trigger	\$139.95
ATH15	1-1500 MHz, High speed	\$179.95
ATH30	1-2800 MHz, High speed	\$239.95
ATH50	ATH-30 plus Hi-Z input 5 Hz to 48 MHz	\$289.95
3500	10 Hz-3500 MHz, wide frequency range	\$219.95

VECTRONICS



Vectronics has two cross needle meters for simultaneous monitoring of power and SWR. The PM-30 has 30 and 3000 watt ranges and a frequency range of 1.8-30 MHz. The PM-30UV covers 100-500 MHz with 30 and 300 watt ranges. **HRO Price PM-30 \$99.95**

DAIWA



CN-460M

- Compact
- Cross Needle Meter
- Mobile / Base Use

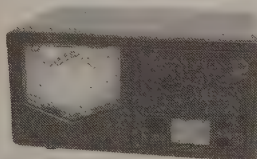
	CN-460M
Frequency	140 - 450MHz
Power Range	15/150 W
Power Rating	150W
SWR Detection	3W minimum
HRO Prices	\$99.95

CN-410M

- 3.5-150 MHz
- HRO Price \$99.95

CN-465M

- 140-450 MHz
- HRO Price \$99.95

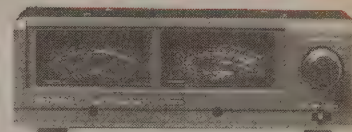


CN-101

- Large cross needle meter
- Forward / reverse read simultaneously
- PEP monitor function

	CN-101
Frequency	1.8 - 150 MHz
Power Range	15/150/1.5 KW
Power Rating	1.5 KW (1.8-60MHz) 1 KW (144 MHz)
SWR Detection	4 W minimum
HRO Price	\$99.95

KENWOOD



SW-2100

Kenwood's SWR / wattmeter features dual meters for monitoring of SWR and forward power. There are two ranges 0-200 W and 0-2000 W with a frequency range of 1.8 - 30 MHz. **HRO Price \$159.95**



NS-660PA

- Cross needle meter
- PEP and RMS readings
- Remote sensors available

	NS-660PA
Frequency	1.8 - 150 MHz
Power Range	30/300/3 KW
Power Rating	3. KW
SWR Detection	8W minimum
Sugg. List	\$199.95

NS-660A

- 1.8-150 MHz
- HRO Price \$199.95

NS-663BM/BN

- 144-525 MHz
- HRO Price \$229.95



DP-800 Series

- Large LCD display
- RMS and PEP readings
- Bargraph display
- Audible Beeps

	DP-830
Frequency	1.8 - 150 MHz 140-525 MHz
Power Range	0 - 1.5 kw 0 - 150 MHz
Power Rating	1.5 KW 150 W
Sugg. List	\$369.95

DP-810

- 1.8-150 MHz
- HRO Price \$249.95

DP-820N

- 140-525 MHz
- HRO Price \$279.95

SOFTWARE STUDY AIDS

License Studies

W5YI

Ham Operator Education Software

Use you IBM or compatible to study and review No-Code through Extra Class License material. The package includes nine diskettes covering all theory and Morse code for all Ham licenses. Includes both 3.5" and 5.25" diskettes. Requires 256K and DOS 2.11 or later. **HRO Price \$39.95**

General Radiotelephone Operator

Pass your GROL fast with computer aided instruction. Complete with 495 page fully illustrated manual. Take sample tests right at your PC, or print them out. Requires 3.5" drive, 256K and DOS 3.2 or better. For IBM PCs or compatibles. **HRO Price \$59.95**

NEW!

AMECO

Learning software is now available for PC compatible computer systems. Instructional packages are available for all licence classes, Novice through Extra.

Prepare for the written exams using your own computer. All possible exam questions are covered word for word as they will appear on the actual exam.

The software includes: user-friendly interface, mouse support, colorful graphs, all required schematic diagrams, and full time on-line help. The software quizzes you on every topic and a sample VEC test can be seen on the screen or printed.

An Ameco FCC Test Manual is included as part of every Test Package. Call for the HRO Price on the Test Packages.

Morse Code

GGTE

Morse Tutor GOLD

Morse Tutor Gold software for the IBM PC/XT/AT and compatibles comes on 3.5" or 5.25" disks.

The eleven menu-driven lessons use a flash card technique to teach Morse code. Each session can be set up to teach only the specific lesson, a random character drill, or a random word drill using only those characters already learned. The last lesson is a random QSO generator based on a large information pool. This lesson is similar to code exams.

The program does standard CW spacing or the Farnsworth method. You may enter your own text from the keyboard or import ASCII files. The character tally is also shown. **HRO Price \$29.95**

Mac Education



MacHam Radio™ Study Guides

Study for the Amateur Licenses with the aid of your Apple® Mac® Computer. Material is taken from the latest FCC question pools. It includes diagrams on screen and is EVERYTHING you need to pass your exams! Test on screen or printed!

You will be VERY impressed with these programs.

MAC Software

No-Code Technician \$39.95

General, Advanced or Extra Each Version Just \$34.95



Reference

Amateur Handbook

This book is like a mini Amateur library! Contains charts, tables, construction plans for all areas of amateur radio. Never go looking through all your other books again for that piece of information. It's here! **HRO Price \$14.95**

U.S. Repeater Map Book

The PERFECT traveling companion for the radio enthusiast. Road maps show major highways and cities in every state. Amateur radio repeater frequencies are included. This is a must for truckers and travelers. Maps are enhanced to provide greater highway detail. **HRO Price \$9.95**

Technical

Guides to Technical Radio Modifications & Alignment Controls

Easy to follow instructions (with detailed drawings) to enhance almost all brands of amateur HT's and mobile radios. Includes extended frequency plans. **Volume A** (Icom, Kenwood, Scanners), **Volume B** (Alinco, Standard, Yaesu, Others) **HRO Price \$19.95 each**

Lost Users Manuals

Lost the manual to your radio? Bought a used radio with no manual? Lost Users Manual contains operating instructions on most popular VHF & UHF radios: Alinco, Icom, Kenwood, Yaesu, Uniden. **HRO Price \$19.95**



BOOKS

License Prep

Riding the Airwaves with Alpha & Zulu

Let Alpha, Zulu and other characters teach you and your kids amateur radio. Have fun studying for the Novice and No-Code Technician tests. 288 pages of cartoons, mini tests and games. **HRO Price \$14.95**

Scanning

Federal Assignments

Ever wonder what the federal government agencies are up to? Listen in! This book, third edition, has the secret frequencies used by our government. By far this is the most comprehensive book we know of. **HRO Price \$24.95**

Police & Fire Communications Handbook

With the ever changing police frequencies in Southern California, it's time an accurate, up-to-date scanner book was available. More than 380 pages of frequencies, inputs & tones. **HRO Price \$19.95**

Shortwave

North American Shortwave Frequency Guide

A comprehensive by frequency list of all HF broadcasts by every country (world-wide) and service that can be heard in North America. **HRO Price \$19.95**

ARRL

ARRL TECHNICAL BOOKS

AIM	Antenna Impedance Matching
DB	Data Book
DN	W1FB Design Notebook
FSIR	First Steps in Radio
HK	Hints and Kinks
ITRFD	Intro to Radio Freq. Design
LBD	Low Band DXing
MEM	Microwave Experimenter Manual
NAN	Novice Antenna Notebook
OM	Operating Manual
PDOYA	Yagi Design
QRP	QRP Classics
RADIODESIGN	Radio Design IBM Software
REFLECTIONS	SWR Theory
RFI	Radio Frequency Interference
RSGB-AWARDS	Awards Book
RSGB-OP MAN	Amateur Radio Operating Manual
RSGB-RCH	Radio Communication Handbook
RSGB-VHF	VHF / UHF Handbook
SA	Satellite Anthology
SEH	Satellite Experimenters Handbook
SSD	Solid State Design
SSS	Spread Spectrum Source Book
TFRB	The FCC Rule Book
TLT	Transmission Line Transformers
TAH	ARRL 1996 Hardcover Handbook
OARS	Operating an Amateur Radio Station
WSH	Weather Satellite Handbook

ARRL LICENSE PREPARATION

10-15ARRL	10-15 WPM Code Tape
13-14ARRL	13-14 WPM Code Tape
15-22ARRL	15-22 WPM Code Tape
5-10 ARRL	5-10 WPM Code Tape
GENVIDEO/SOFT	Gen Class Video / IBM Exam
TECHVIDEO/SOFT	Tech Class Video / IBM Exam
NYT II	Study Guide for the No-Code Technician License
LM-TECHNICIAN	Technician Class Manual
LM-GEN-II	General Class Manual
TAACLM	Advanced Class Manual
TAELCM	Extra Class Manual
TFRB	FCC Rule Book
YITMC	Introduction to Morse Code

ARRL LISTINGS

DXCC LIST	Official ARRL DXCC List
LB	Log Book
ND	Net Directory
RD	Repeater Directory

ARRL MAPS

GRID ATLAS	Grid Locator Atlas
GRID MAP	Grid Locator Map
USCAM	U.S. Call Area Map
WM	World Map

Magazines

73	73 Monthly Magazine
CQ	CQ Monthly Magazine
CQVHF	CQ VHF Magazine
BG	Equipment Buyers Guide
Popular	Popular Communications
QST	QST Monthly Magazine
MT	Monitoring Times
WRN	World Radio News

Scanner Books

HRO stocks many books that contain scanner frequencies for localities around the country. Contact your nearest HRO store for details.

ARRL READING

CQGS	CQ Ghost Ship
DVQTH	Death Valley QTH
DXBD	DX Brings Danger
DXCC COMPANION	DX Guidebook
FSTS	From Spark to Space
GCQ	Grand Canyon QSO Book
HFNH	Help for New Hams
MBQ	Murder by QRM
MORSE CODE	The Essential Language
NCJ	Bi-Monthly National Contest Magazine
NS	Night Signals
NN	Novice Notes
QRP NOTE	QRP Notebook
QST	Monthly Magazine of ARRL
SOSAM	SOS at Midnight
YVC	Your VHF Companion
FIREWATCH	Firewatch Novel
ET	Easy Target Novel

ARRL PACKET BOOKS

GTPR	Gateway to Packet Radio
PSMSA	Packet Speed, More Speed & Apps

ARRL ANTENNA BOOKS

AB	17th Antenna Book
ACVOL4	Antenna Compendium Vol. 4
AN	W1FB Antenna Notebook
NAN	Novice Antenna Notebook
RSGB-ANT	H.F. Antenna Book
RSGB-WIRE	Wire Antennas
YAD	Yagi Antenna Design

CQ Books / Publications

1997ALMANAC	CQ 1997 Ham Radio Almanac
ARC1997	Amateur Radio Calendar 1997
BAUBAU	Building & Using Baluns and Ununs
BG-97	1997 Equipment Buyers Guide
LMOA	Law McCoy on Antennas
QUADANTENNAS	Quad Antennas
RCC1997	Radio Classics Calendar 1997
TPROM	The Packet Radio Ops Manual

ARTSCI

ALPHA&ZULU	Ride the Airwave w/Alpha & Zulu
AMAT HB	Amateur Handbook
FA	Federal Frequency Book
LUM	Lost Users Manual
NASFG	Shortwave Guide
RTM	Guide to Radio Mods
RA	Radio Atlas
USRG	US Repeater Guide

RADIO PUBLICATIONS

ANTENNA HB	Antenna Handbook
BEAM	Beam Antenna Handbook
INTERFERENCE	Interference Handbook
QUAD	All About Cubical Quads
SHORTWAVE	Better Shortwave Reception
VERTICAL	All About Vertical Antennas
VHF	All About VHF Amateur Radio
WIRE	Low-Cost Wire Antennas
COMPLETE DX	Complete DX'er by W9KNI

**Internet
On-line Ordering
24 Hours per Day**

<http://www.hamradio.com>

Short Wave Listening

MT	Monitoring Times Monthly
PASSPORT	Passport to World Radio
WRTVH	World Radio TV Handbook

CALLBOOK

USCB	North American Callbook
DXCB	International Callbook
RAC-CD	National and International Callbook CD-ROM—See page 54

QRZ! Ham Radio CD-ROM

QRZ! Ham Radio's CR-ROM for DOS and Windows is the perfect information source for Hams and SW listeners. For details see page 54.

Buckmaster

The HamCall™ CD-ROM of US and international calls and other Ham data from the FCC works with Mac, Windows, or DOS. Details on page 54.

Study Aids

AMECO

100-T	Junior Code Tape
101-T	Senior Code Tape
102-01	Amateur Radio Theory Course
103-T	Advanced Code Tape
104-T	Extra Class Code Tape
105-QT	General Class QSO Course Tape
106-QT	Extra Class QSO Course Tape
12-01	General Class Test Manual
17-01	Extra Class Test Manual
26-01	Advanced FCC Test Manual
27-01	Novice FCC Test Manual
28-01	Technician Class Test Manual
EN-1	Novice Class Exam
78-01	Codeless Technician Manual

GORDON WEST / W5YI

GWTM	No Code Technician Manual
GWGM	General Class Study Manual
GWAM	Advanced Study Manual
GWEM	Extra Class Study Manual
NCV	No-Code Video Seminar - Tech
NCVP	No-Code Video Seminar - Tech, manual, rule book
HCV	Gordon West Ham Class Video
GWNT	Novice Code Teacher Tapes
GWGT	General Class Code Refresher Tape
GWET	Extra Class Code Refresher Tape
GWN6	Novice Learning Code Tape
GWG6	General Speed Builder Code Tape
GWE6	Extra/Commercial Code Course Tape
GWNW	Novice Class Theory Tapes
GWTW	Technician Class Theory Tapes
GWGW	General Class Theory Tapes
GWAW	Advanced Class Theory Tapes
GWEW	Extra Class Theory Tapes

KB6MT

CODE	Novice to 21 WPM Code Training Tapes
IT	Instant Theory Tape
IT-NCTECH	Instant Theory No Code Tech
IT-NOVICE	Instant Theory Novice
IT-TECH	Instant Theory Tech
IT-GEN	Instant Theory General
IT-ADV	Instant Theory Advanced
IT-EXTRA	Instant Theory Extra
WORDS	Code word course

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty.

CD-ROMs

QRZ!

Ham Radio CD-ROM for DOS and Windows

HRO Price \$19.95

Ham radio and short wave enthusiasts will be pleased that QRZ now supports Windows 3.1 and Windows 95.

Of particular interest is the new QRZWIN call sign search-and-retrieval software that allows easy access to more than 600,000 names and addresses of US and Canadian hams. The full name, address and FCC license information is included with each record.

QRZWIN provides editing and printing functions which make custom mailing lists easy. Import the information to your favorite word processor for advanced formatting and list processing. It features an open database with documentation so users can create their own custom applications.

Several ham radio logbook utilities support the QRZ database. DOS routines are included for non-Windows users.

Also included on the CD-ROM are the complete text to the FCC approved license examinations, questions and answers, current rules and regulations, and 100's of shareware utilities.

BUCKMASTER

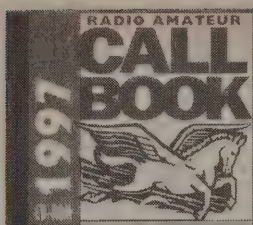
HamCall™ CD-ROM

HRO Price \$50.00

Look up US & International call signs. More than **1,186,000** listings and **113** countries. Lists in new FCC data format: U.S. clubs, military stations, reciprocal calls, 687,000 U.S. amateurs, and 392,000 International calls. ICALL DOS & Windows programs look up: name, address, expiration date, birth date, license class, county, lat / long, area code, time zone, grid square, previous call and class, latest FCC transaction.

Retrieve by any data element including county on PC; call sign on MAC. Hundreds of shareware programs are on the disc.

- No hard disk required.
- Export to hard disk or floppy.
- TSR runs from text window; displays county.
- Print labels.
- Standing orders accepted.
- Latest public domain PC Software.



Radio Amateur Callbook CD-ROM 1997

HRO Price \$49.95

This is the most extensive radio amateur directory on the market. Incorporating both the North American and International editions of the world's most respected callbooks, it provides more than 1.3 million listings in more than 250 countries, islands, and dependencies.

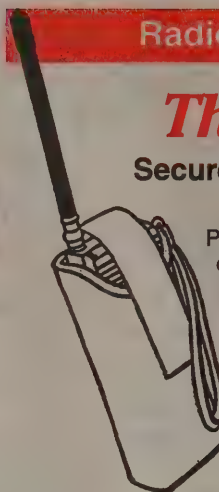
By including several countries not found in other directories, the Callbook CD-ROM offers unmatched world coverage.

- Windows / DOS platform.
- Data display by callsign, last name, city, license class, issue, and expiration dates.
- Search U.S. stations by callsign, last name, and city.
- Search international by callsign, last name, city. Text search by name, street, city, province, or region after selecting country.
- Unique sound output of Morse code alphabet can be used by the blind or anyone who wants to learn Morse code.
- Windows clipboard tool for single label or applications. Import data into logging spread sheet, word processor, or label printing program. Logging program interface available.
- Listings of clubs, "Then and Now" call letter changes, military, and silent keys.
- Text files listing prefixes by countries (40 zones), DXCC countries list, census of amateur prefixes, QSL bureaus, reciprocal operating agreements, 10-meter beacons, 6-meter beacons, international "Q" signals, and much more.

Radio Protectors

The Pouch

Secure Shock Absorber



Protective carrying-case made of black nylon bonded to bouncy neoprene. Quick release, snap-out belt loop lets you remove entire holster from your belt instantly. Web restraining strap secured on front with velcro.

HRO Price \$16.95

Manufacturer	Radio Model	Pouch Model	Comments
ADI	AT-200/400	S1	
Alinco	DJ-G1T	S1	
	DJ-G5T	Slim	
	DJ-180	S1	
	DJ-191	Slim	
	DJ-580 & 582	S2	
AZDEN	AZ 11/21/61	S3	
Icom	IC-2GXAT	S1	
	IC-2IA/4IA	P5	
	IC-2SAT	P5	
	IC-21	S2	all: T/V/W/X-21
	T7	P5	
	IC-T22	P5	
	IC-W31	S2	
	IC-Z1A	S2	
Kenwood	TH-22/42A	SS	for 5 watt battery
		Slim	for 3 watt battery
	TH-28/48A	S1	for high pwr battery
		S2	for low pwr battery
	TH-78A	S1	for high pwr battery
		S2	for low pwr battery
Standard	TH-79A	S1	for high pwr battery
		S2	for low pwr battery
	C-108/508	P4	
	C-168/468	S1	
	C-158/458	S2	
	C-178	S1	
	C-"28 Series	S2	all C228/528/628
	C-558	S2	
	C568	S3	
Yaesu	FT-10R	10R	fits 2 and 5 watt batteries
	FT-11R/41R	P5	
	FT-50R	10R	
		50R	either battery
	FT-51R	SS	
	FT-530	S2	

ChestPOUCH

"Hands-free" security with the ChestPOUCH. Heavy-grade, double-ply black cordura covers plastic "leather" chest-plate for durability, pliability and toughness. Tough, resilient nylon-covered neoprene for radio and battery holders. Fully adjustable "harness" attaches to bib. Pen or penlight holder, big back pocket for maps, manual, etc. Only for radios which fit POUCH sizes: SS, S1, S2 or S3 above. **HRO Price \$39.95**

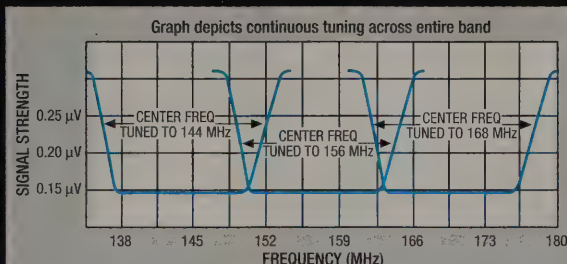
2m/70cm Mobiles **FT-2500M/FT-7400H**

Advanced Track Tuning, Mil Spec, true FM. All in one radio!

Outside, you can easily see why the FT-2500M stands up to the shock and vibration like no other. We engineered the first mobile radio to meet the rigid standards set by the U.S. Military back in the '80s, and that same critical design is in the FT-2500M. From the simplified front panel, rubber coated knobs, durable pebbled finish coating, and huge Omni-Glow™ display to the one-piece die-cast chassis, the FT-2500M can take whatever you throw at it!

Inside, the electrical circuitry meets standards so uncompromising the FT-2500M can respond like no other radio. Built-in 3-Stage Advance Track Tuning (ATT), automatically retunes from 140 to 174 MHz permitting consistent receiver sensitivity across the entire band.

But there's more. Like alpha-numeric display capability! Lets you program a frequency or a 4-character name on any of the 31 memories. With three selectable power output levels and up to 50 watt power output, the FT-2500M extra large heat sink means forced air cooling is not necessary. And, as a bonus, Yaesu's



3-Stage Advance Track Tuning (ATT) – The exclusive 3-Stage Advance Track tuning front end automatically adjusts band width sensitivity across the entire receiver range, while maintaining selectivity specifications. ATT significantly reduces interference from inter-modulation and front end overload.

exclusive backlit DTMF mic comes with every FT-2500M.

Experts say the FT-2500M is the only commercial-grade amateur radio available. So, for tough manufacturing standards, inside and out, with true FM clarity and outstanding performance, the FT-2500M is your mobile.

YAESU

Performance without compromise.™

"Just look inside. Military spec really means something to Yaesu!"

"A QST review says 'the FT-2500M exhibited superior 10 MHz offset IMD dynamic range of 103 db!'"

"This Advanced Track Tuning practically eliminates intermod!"

"Yaesu did it again."

Specifications

- **Frequency Coverage:**
FT-2500M
RX: 140-174 MHz
TX: 144-148 MHz
FT-7400H
RX/TX: 430-450 MHz
- Rugged Military Spec Design
- Advanced Track Tuning (ATT)
- Selectable Alpha-Numeric Display
- Omni-Glow™ Display, largest available
- **Power Output:**
FT-2500M 50/20/5 Watts
FT-7400H 35/15/5 Watts
- Flip Up Front Control Panel hides seldom used buttons
- Backlit DTMF Mic
- 31 Memory Channels
- CTCSS Encode Built-in
- Automatic Power Off (APO)*
- Time-Out Timer (TOT)*
- Manual* or Automatic Backlighting Adjustment
- **Accessories:**
FP-800 20 Amp HD Power Supply w/ Front Mounted Speaker
FRC-6 DTMF Paging Unit
FTS-17A CTCSS Decode Unit
SP-4 External Mobile Speaker w/ Audio Filters

*FT-2500M

FT-3000M

High-Powered 2-m FM Transceiver
Feature-rich, 70 full watts of TX power, and built to the tough performance standards you've come to expect from Yaesu.

FEATURES • Frequency Coverage Wide Band Receive– RX:110-180 MHz, 300-520 MHz, 800-999 MHz* TX:144-148 MHz • AM Aircraft Receive • MIL-STD 810 Rating • Interactive Programming • High Power Output: 70 Watts, plus 50, 25 and 10 Watts • Quick-Touch™ Dual Concentric Control Knob • Twin Cooling Fans • ADMS-2 Windows™ Programmable • Digital Coded Squelch (DCS) • 81 Memory Channels • Auto Range Transpond System™ (ARTS™) • 1200/9600 Baud Packet Compatible • Smart-Search™ • Alphanumeric Display • Dual Watch • Full line of accessories
*800 MHz Cellular blocked



All's quiet outside.



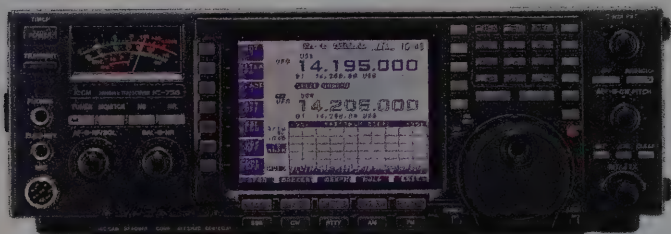
IC-707 Lowest Price ICOM HF! • 100 W (AM 25 W) • All Modes • Simple to Use! • 500 kHz–30.0 MHz General Coverage Receiver • Minimum Number of Keys • Front Facing Speaker • Large Display • Rugged Construction—Great for Mobile Operation • 100% Continuous Duty Cycle • 32 Memory Channels • PC Programmable • 13.8 V DC • Dimensions/Weight: 9.5"(W), 3.7"(H), 9.4"(D), 9.1 lb



SMALLEST HF EVER!

IC-706 HF + 6M + 2M! All Modes! — Easy to Use as a Base or Mobile Rig! —

• HF + 6 M (100 W) SSB/CW/AM/FM/RTTY • 2 M (10 W) SSB/CW/FM/RTTY • Detachable Control Panel/Display • SSB/CW/AM Narrow Filter Options • 101 Alphanumeric Memories • General Coverage Rx • Noise Blanker • IF Shift • Preamp/Attenuator • CW Keyer • CW Pitch Control • Full Break-in (QSK) • Speech Processor • VOX • LCD Display with 1 Hz Readout • Easy-to-use Menu System • Tone Encode Built-in • 2 Antenna Connectors • Voice Synthesizer Opt. (UT-102) • **Very Affordable Price!** • Dim/Wt: 6.6"(W), 2.3"(H), 7.9"(D), 5.5 lb



NEW! IC-756* All New HF + 6M with Adjustable IF-DSP! • 4.9" Concentrated Information LCD Dot Matrix Display with Spectrum Scope, Alphanumeric Memories and Soft Key Buttons • 100 W Stable Output Power (40 W AM) • SSB/AM/FM/CW/RTTY • Automatic Antenna Tuner • 101 Memory Channels • Automatic IF Notch Filter • Level/Width Variable Noise Blanker • PSN Modulation • Selectable Audio Peak Filter • Dual Watch • Twin Pass Band Tuning • Power MOS FET's • New High Performance Memory Keyer • Morse Code Mode Announcements to Aid the Visually Impaired • PC Programmable with CI-V Capability • 12 V Operation • Speech Synthesizer • **Very Affordable Price!** • Dimensions/Wt: 13.4"(W), 4.4"(H), 11.2"(D), 23.1 lb



IC-775DSP Pull Out Signals No Analog Rig Can! • IF-DSP (Digital Signal Processing) Tx/Rx • 200 W Stable Output Power • (SSB/AM/FM/XCW/RTTY) • Built-in Heavy Duty Power Supply • Built-in Auto Antenna Tuner • Auto IF Notch Filter • Adjustable DSP Noise Reduction • Level/Width Variable Noise Blanker • PSN Modulation • Audio Peak Filter • Dual Watch • Twin Tuning Knobs • Twin Pass Band Tuning • Front Panel Switch Control Dual Antenna System • Power MOS FET's • CW Pitch Control • Electronic & Memory Keyer • Front and Back CW Keying Jacks • 1 Hz Tuning and Display • 99 Memory Channels • Selectable Pre-Amp (2 Levels) and RF Attenuator (3 Levels) • Built-In CTCSS Tone Encoder • VOX • Tx Frequency Check • Noise Blanker with Adjustable Level and Width • AGC with Adjustable Time Constant • Dimensions/Weight: 16.7"(W), 5.9"(H), 15.4"(D), 36.8 lb



IC-781 The Ultimate ICOM HF Transceiver • 150 W (75 W AM) • Multi-Function CRT Display • Dual Watch • Built-in Tuner • Quad Conversion Receiver • Twin Passband Tuning • Built-In Power Supply • Too Much to List—Call! • Dim/Wt: 16.1"(W), 5.9"(H), 16.2"(D), 50.7 lb



NEW! IC-821H 2M/440 MHz Advanced Satellite & Digital Base Station • All Modes • Easy to Use!

• Continuous Adjustable Transmit Power • Sub Band Transmit • 9600 Full Compatibility Out of the Box • 160 Memories • Noise Blanker & IF Shift on Main & Sub Bands (independent main/sub Rx) • Built-In Electronic Keyer • Satellite Tracking with Doppler Correction • Compact! 9.5"(W), 3.7"(H), 9.4"(D), 11.0 lb

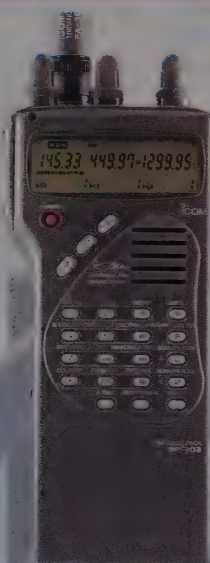
No-Code Techs!
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(Due 5/97)



NEW! IC-R8500* Next Generation HF/VHF/UHF World Receiver!

• Wide Frequency Range: 100 kHz – 2000 MHz (cellular blocked; unblocked OK to FCC approved users) • All Modes • Superior Receive Characteristics • Built-In CI-V and RS-232C Hardware for Advanced Computer Control • IF-Shift • Audio Peak Filter • Noise Blanker (SSB/AM) • RF Attenuator • 1000 Memory Channels • 13 Different Tuning Steps • 3 Antenna Connectors • S-Meter Squelch (in addition to ordinary noise squelch) • Selectable AGC Time Constant • High Stability (<30 MHz: ± 1.00 Hz, V/UHF: ± 3 ppm) • 12V DC/120VAC • **Very Affordable Price!** • Dimensions/Weight: 11.3"(W), 4.4"(H), 12.2"(D), 15.4 lb

ICOM brings the airwaves ALIVE!



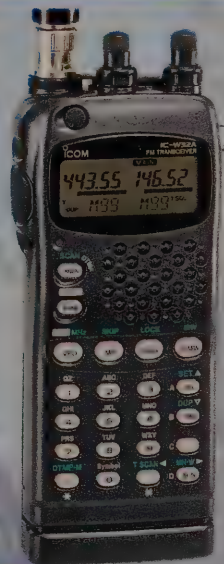
IC-Δ1A 2M/440 MHz/1.2 GHz Tri Band • 5 W (1 W on 1.2 GHz) • Simultaneous Rx on All 3 Bands • Speaker Selection • 3 Independent Displays • Crossband Double Duplex • Adjustable CPU Controlled Squelch • 78 Memory Channels • Dim/Wt: 2.3"(W), 5.7"(H), 1.9"(D), 1.4 lb



IC-T22A/IC-T42A (2M/440 MHz) • Fun, Shirt Pocket Small and Easy to Use! • Large Alphanumeric Display • Wide Rx Coverage • 5 W @ 13.5 V (3 W Out of Box) • Air Band Receive • 80 Memory Channels (40 w/Alpha Display) • Dimensions/Weight: 2.3"(W), 4.3"(H), 1.1"(D), 10.9 oz.



IC-T7A 2M/440 MHz Dual Band • Dual Bands at a Single Bander Size & Price! • Very Easy to Use—No Function Key • 4 W (2M) / 3 W (440) @ 13.5 V • "Intuitive" Help Display • CTCSS Encode/Decode • **Very Affordable!** • Dim/Wt: 2.5"(W), 4.8"(H), 1.1"(D), 11.3 oz.



NEW! IC-W32A 2M/440 MHz Dual Band • 5 W Out of the Box! • No Function Key! • PC Programmable • 200 Memories with Alphanumeric Display, Messaging & Paging • "Intuitive" Help Display • Backlit Display and Keypad • Wide Band Rx (Including Air Band) • V/V, V/U, U/U Operation with VHF/UHF Tuning Knob Exchange • Encode/Decode • PC/Radio-to-Radio Cloning • Dimensions/Weight: 2.2"(W), 4.9"(H), 1.2"(D), 12.0 oz



IC-2000H 2M Intermod Fighter! • Wide Band Rx (118–174 MHz) • Highly Intermod Resistant • 50 Watts of Power • 50 Memory Channels with Alphanumeric Display • AM Aircraft Rx • Full/Program Scan • **Very Affordable Price!** • Dim/Wt: 5.9"(W), 2.0"(H), 5.9"(D), 2.4 lb



IC-2350H 2M/440 MHz Dual Band • 2M (45W)/440 MHz (35W) • Fast Scanning • 110 Channel Capacity Backed Up with EEPROM • Wide Band Rx (118–174 MHz) • PL Encode Built-In • Duplexer Built-In • Auto Repeater Shift • Dimensions/Weight: 5.5"(W), 1.6"(H), 8.1"(D), 2.6 lb

IC-2710H 2M/440 MHz Dual Band • 2M (50W)/440 MHz (35W) • Detachable Control Panel • Fast Scanning • 220 Memory Channels • PC Programmable • CTCSS Encode (decode optional) • RF Attenuator • 8 DTMF Memory Switches • V/V, U/U Simultaneous Rx • Built-In Duplexer • 3 Selectable Power Levels • Dim/Wt: 5.5"(W), 1.6"(H), 8.4"(D), 3.1 lb



IC-Δ100H 2M/440 MHz/1.2 GHz Tri Band • 2M (50 W), 440 MHz (35 W) 1.2 GHz (10 W) • 8 Different Combinations of 2 M, 440 MHz & 1.2 GHz Tx and Rx • 642 Memories • Detachable Front Panel • Full Remote Control Microphone • Dimensions/Weight: 5.5"(W), 2.0"(H), 7.7"(D), 4.5 lb



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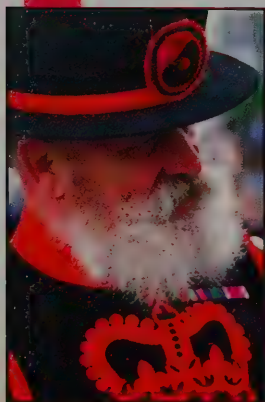




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Only Grundig with its reputation for world class electronics could offer a radio so advanced and compact: AM/FM Stereo/Shortwave, digital tuning, auto scan and 40-memories, clock alarm and timer. Also includes *Grundig Shortwave Listening Guide*, batteries, external antenna,



YACHT BOY 400



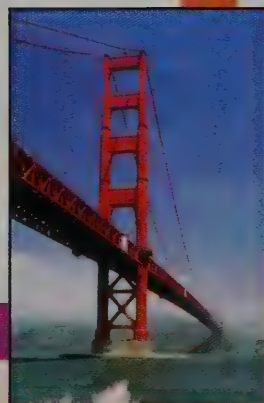
Features:

- Shortwave/AM/FM and longwave
- Continuous shortwave from 1.6-30 MHz
- Clock, alarm and timer
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- 100 memories
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- Clear Dot-Matrix display with alpha-numeric ID
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C508A

C508A 2 Meter & 440MHz Dual Band

- VHF & UHF IN YOUR SHIRT POCKET
- 280 mW with 2-AA batteries
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 - Freq steps 5, 10, 12.5, 15, 20, 25, 30 and 50

C528A C628A C228A

C228A 2M & 220MHz Deluxe Twin-Band HT

- 5W (2M and 220) at 12VDC
- 40 memories (20 + 20 "limited" memories)
- 130-174 and 200-244MHz extended receive
- 1 Auto Dial memory
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C188A C288A

C188A 2 Meters The Slim-Line HT

- Fits in your shirt pocket!
- 5W at 12VDC
- 40+ memories (or optional 200+ memories with snap-in chip)
- 115-174MHz extended receive (including AM air band)
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C288A 220 MHz Slim-Line HT

- Same as C188A but for the 1 1/4 meter band
- 115-249 MHz extended receive
- TX 220 MHz band

C468A C168A

C168A 440MHz The Deluxe small HT

- 2 Meters
- The Deluxe small HT 5 watts at 12VDC
- 40+ memories (or optional 200+ memories with plug-in chip)
- 115 to 174MHz extended receive (including AM aircraft band)
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C468A 440MHz The Deluxe small HT

- 5 watts at 12VDC
- 40+ memories (or optional 200+ memories with plug-in chip)
- 400-474MHz extended receive
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C528A 2M & 440MHz Deluxe Twin-Band HT

- 5W (2M and 440) at 12VDC
- 40 memories (20 + 20 "limited" memories)
- 130-174 and 300-474MHz extended receive
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C628A 70 cm & 23 cm

- Same as C528A but for the 70 & 23 cm band
- 5W 70 cm and 1W 23 cm at 12VDC

C558A

C558A 2 Meter & 440MHz Elegance, Balance and Twin-Band Performance

- 5W at 12VDC
- 40+ memories (opt. 200+ memories with plug-in chip)
- 115-174 & 340-474MHz extended receive (including AM aircraft band)
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

C108A 2M & Very Small HT

- 20 memories
- 100-174 0MHz extended receive (including AM aircraft band)
- CTCSS Encode 23 tones
- 1 MHz, Full Range, Memory, and Memory-Scan-Memory: Programmable for Pause & Busy
- DC Power: 2 alkaline AA penlight cells

C108A

C178A

C178A 2 Meters (+low power 440) The Deluxe Dual-Band HT

- Single-Band Price
- 5W (2M) at 12VDC & 50mW (440)
- 40+ memories (opt 200+ with plug-in chip)
- 110-174 & 320-474MHz extended Rx (including AM air band)
- CTCSS Encode/Decode
- DTMF squelch with Paging
- Scanning-busy, pause or hold

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Highlighted here is just a sampling of innovative products available from Hy-Gain. While examining this catalog, keep your eyes peeled for detailed information about many more Hy-Gain products and accessories.

DX77 Advanced Vertical Windom

This advanced vertical antenna provides 55% greater bandwidth on 20 and 40 meters, and requires no ground radials.

TH11DX

This uniquely designed antenna provides the frequency coverage of a log periodic, **plus** the performance of a monobander.

Ham V with DCU-1 Digital Control System

The Ham V is designed for medium communications antenna arrays of up to 15 sq. ft. (1.4 m²) wind load area. The **DCU-1** features digital and analog displays with six presets, automatic brake delay, motor slow down, automatic calibration and programmable center of rotation.

V2R

A rugged antenna for 2 meters, the V2R delivers 3 dBd gain with a wide coverage pattern.

TH3 Mk4

A classic tribander, the TH3 Mk4 is an ideal choice for home stations and DXpeditions.

DX88

If you want 80 meters in a vertical, this is your antenna. Better bandwidth than found in add-on kits.

V6R

This antenna design is based on 2 collinear 5/8 wave vertical radiators and covers 51-54 MHz.

DB-1217

A 7 element, 2 band beam antenna designed for operation on the 12 and 17 meter amateur bands, and packaged for DXpeditions.

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Hy-Gain's OSCAR LINK antennas are ready for Phase 3D on the "V" and "U" bands. They may also be used on the other OSCAR satellites, including the new JAS-2.

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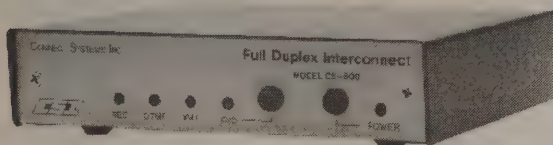
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Telephone Interconnects

CSI interconnects provide a fully automatic interface between your FM base radio and your phone line so that you can initiate and receive phone calls in your mobile or on your HT without any assistance.

Only CSI interconnects bring you powerful microprocessor controlled features such as: 90 memory speed dialer • Last number redial • Built-in programming keyboard and digital readout • Remote base mode • Regenerated tone or pulse dialout • CW ID • Toll restrict numbers and sequences ... And More!

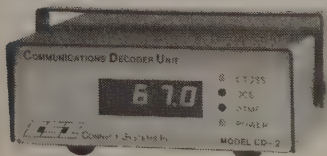


CS-900

The **CS-900** is a VOX simplex interconnect for use with any simplex transceiver. It can also be used through remotely located repeaters (from your base) for additional range. Digital voice delay is standard. Connects to the mike and speaker jacks of your simplex transceiver. Transceiver switching speed does not affect performance. There are ten user-programmable Toll Override Exception sequences. This allows selective override of toll restrict enabling you to dial specific area codes or exchanges within selected area codes, etc. Another new feature is over-the-air and over-the-phone remote DTMF programming (in addition to the internal keyboard and digital display programming). FCC and DOC approved. 12-15 VDC. **Suggested List Price \$349.95**

CS-800

The **CS-800** operates full or semi duplex and also has a built-in repeater controller. Simply connect to the mike and speaker jacks of your dual band transceiver. FCC and DOC approved. 12-15 VDC. **Suggested List Price \$349.95**



CD-2

CD-2P Software

When mobile, the **CD-2** will make it easy for you to use open repeaters and autopatches because it decodes and displays any CTCSS, DCS or DTMF codes other amateurs are using on the channel. When the base, the RS-232 port exports all decoded CTCSS, DCS or DTMF data to your PC allowing use of **CD-2P** software. It maintains a history of CTCSS / DCS / DTMF data from your CD-2 occurring on the channel being monitored, creates usage graphs, etc. PC / DOS based. 12-15 VDC.

Suggested List Prices: CD-2 \$299.95; CD-2P Software \$79.95

Connect Systems manufactures a wide range of telephone interconnects and commercial equipment. Please contact HRO or visit the CSI Worldwide Web page at <http://www.connectsystems.com>

ACCESSORIES

Encoders / Decoders



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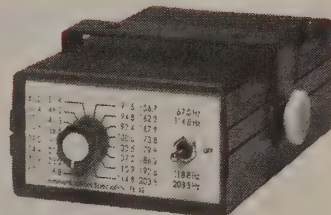
Tone encoders and decoders from Communication Specialists are just what you need to control your repeater or listen only to signals that are meant just for you.

	Encode	Decode	Comments	HRO Price
TS-32P	k	k	Universal design, CTCSS encoder / decoder capability for all FM transceivers	\$57.95
SS-32PA	k		DIP switch programmable CTCSS encoder for all FM transceivers	\$28.95
SS-32SMPk		k	Micro-miniature CTCSS encoder for HTs. Programming by solder jumpers.	\$27.95
TE-64	k		Multi-purpose CTCSS / Burst Tone encoder	\$79.95

TE-32

CTCSS Encoder

The **TE-32** multi-tone CTCSS encoder is perfect for mobile operations or the test bench. It is powered by an 11 to 25 vdc unregulated source. It has a three position range switch and a frequency accuracy ± 0.1 Hz maximum over the temperature operating range. The **TE-32** is low impedance (1K), low distortion, with adjustable sine wave output, 5 V peak to peak. **HRO Price \$79.95**



Phone Patches



KENWOOD PC1A

This phone patch is compatible with the Kenwood radio line and comes with an 8-wire cable for direct connection to the radio mike plug. The **PC1A** is FCC part 68 registered. Wired for Kenwood radios but may be used with others after proper changes in the connections. **Suggested List Price \$134.95**



SP-767P

The **SP-767P** is the phone patch version of the popular **SP-767** speaker. Cables are provided for connection to the current line of Yaesu HF radios. It does not include the audio filters of the **SP-767** speaker. **Suggested List Price \$136.95**

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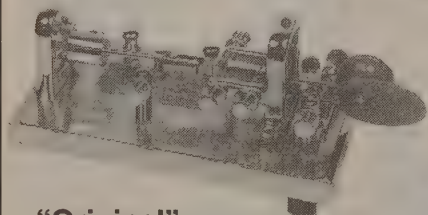
"Iambic"

The Iambic paddle brings the traditional Vibroplex design to modern telegraphy.

Iambic Presentation: 24K gold plated brass plate on a polished chrome base with bright chrome top parts. Silky smooth movements are jeweled as in fine Swiss watches.

Iambic Deluxe: Same as Presentation but without the 24K gold plated brass plate.

Iambic Standard: A neat textured-finish gray base with chrome top parts.



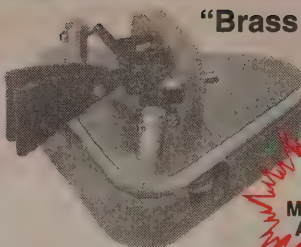
"Original"

The original Vibroplex, with little modification, is made today by the same company using the same tools and dies as always. Modern-day operators can put their fist to the same equipment as the Western Union and railroad operators of old.

Original Presentation: 24K gold-plated brass plate on a highly polished chrome base with bright chrome top parts. Its silky smooth jeweled movements are the same as those used in fine Swiss watches.

Original Deluxe: Same as the Presentation but without the 24K gold plated brass plate.

Original Standard: A crisp textured - finish gray base with bright chrome top parts.



"Brass Racer"

Square
Base
Model Now
Available

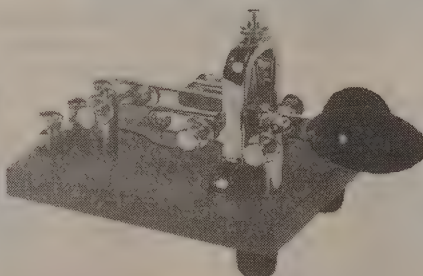
The Brass Racer-Iambic is a new design of the Iambic paddle, crafted from solid brass and mounted on a base of polished hardwood. Paddle tension can be customized with a single twist of our unique tensioning system. No screws, no springs.

The Brass Racer EK-1 is also a keyer. Concealed in the base is a fully Iambic, dot-dash-inserting, adjustable-speed-control keyer using the Curtis 8044 chip. A great unit for mobile or DXpedition.

Brass Racer Iambic: Solid lacquered brass mounted on a hardwood base. **Suggested List \$89.95**

Brass Racer EK-1: Same as Brass Racer Iambic but includes a built-in electronic Iambic keyer. **Suggested List \$149.95**

Brass Racer Iambic - Square Base
Suggested List \$129.95



"Vibrokey"

The Vibrokey is designed for "Bug" operators who want to move to electronic keyers without relearning keying. The single lever paddle initiates the automatic dots and dashes of the electronic keyer with the same motion used to operate the "Bug." It uses the same main frame and chrome parts as the "Original" for the same smooth and easy operating Vibroplex feel.

Vibrokey Deluxe: Highly polished chrome base with bright chrome top parts. Silky smooth movements are jeweled as in fine Swiss watches.

Vibrokey Standard: A crisp textured-finish gray base with bright chrome parts.

BENCHER, INC.

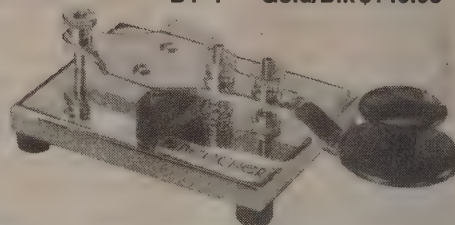


BY Series Iambic Paddles

You will enjoy the smooth, precise action of a Bencher paddle with any Iambic keyer. These paddles feature a heavy steel base, gold plated silver contact points, non-skid feet, stainless steel adjustable spring, self-adjusting needle bearings, and large acrylic finger paddles.

HRO Prices:

BY-1	Black	\$79.95
BY-2	Chrome	\$99.95
BY-3	Gold	\$239.95
BY-4	Gold/Blk	\$149.95



RJ Series Hand Keys

The "RJ" hand keys have an advanced American-style design derived from the telegraph keys that won the west, yet with modern features like Oilite bearings, a solid navy knob, gold-plated solid silver contacts, full locking adjustments of all tension and spacing parameters, and Bencher quality materials throughout.

These keys are ideal for the new amateur just mastering code as well as the old time brass pounder anxious to "clear the hook." This key offers the Morse code operator an investment that will bring years of pride and satisfaction.

Try the Bencher "RJ" hand key at your nearby HRO. You will be convinced there is no better key available.

HRO Prices:

RJ-1	Black	\$74.95
RJ-2	Chrome	\$84.95

ST Series Single Lever Paddles

Superb Bencher features and construction for the ham who prefers single lever operation.

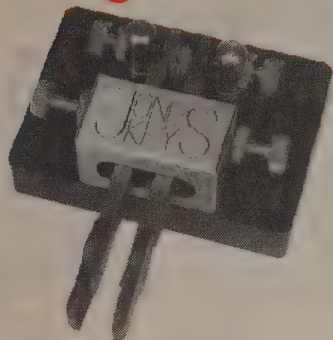
HRO Prices:

ST-1	Black	\$79.95
ST-2	Chrome	\$99.95

MICROPHONES & HEADSETS

More Keys

Palomar Engineers



Precision made by Jones of England. Imported by Palomar. Smooth solid iambic action by rotary ball bearings enclosed in machined brass block on steel base. Adjustable spring tension, paddle height and paddle spacing. 3-1/2 pound total weight. Gold plated contacts. Engraved serial number.

PK-200 Brass mechanism with red steel base \$169.95
PK-200B All Brass \$189.95



Master Key 330-001

The perfect straight key comes with cord and plug. Isolated contact assembly separates keying circuit from hardware. Includes gold-plated silver contacts, adjustable key arm, Navy knob, and heavy die-cast base. **HRO Price \$59.95**



Straight Keys

Keys with gold-plated heavy silver contacts, adjustable key action, and heavy die-cast bases. Brass or nickel-plated hardware, standard or Navy knobs.



HM-10 Series

By selecting the correct hardware, you can design the EXACT audio set up you need for your station. With Heil hardware you can clamp it, screw it, bolt it, or hold the **HM-10**. The components are shown below. They are available pre-wired for Kenwood, Yaesu and Icom. Please specify your radio.

Model	Description	Sugg. List
HM-10 (4)	Mike with case and HC-4 element	\$85.95
HM-10 (5)	Mike with case and HC-5 element	\$85.95
HM-10 Dual	Mike with both HC-4 and HC-5	\$131.95
MA-1	Adjustable Boom	\$49.95
FS-1	Foot Switch	\$24.95
TB-1	Table Base Mount	\$19.95

Replacement Microphone Elements HC-4 / HC-5

The **HC-4** is for serious DX and contest operators. With a 10 dB peak at 2,000 Hz and the low rolled off sharply at 500 Hz, this is best for getting through the pile ups. **HRO Price \$28.95**

The **HC-5** has higher fidelity and is the recommended element for the Icom SM-5/6. The output level matches that required for the Kenwood and Yaesu HF radios. **HRO Price \$28.95**



Pro Headsets

Heil's headsets for the amateur provide comfort and performance. Available for use with Icom, Kenwood and Yaesu. Contact HRO for specifications. Connecting cables optional for Icom, Kenwood and Yaesu.

Pro Set The first in the Pro-Series Boom Headsets, the Pro Set provides superior comfort and quality. **Suggested List \$135.95**
HRO Price \$119.95

Pro Micro Heil's newest addition to the Pro Series is the Pro Micro. It's virtually a miniature version of the Pro Set. Created for long-term comfort and superior performance, it doesn't cover the entire ear like the Pro Set—a feature requested by some Hams. **HRO Price \$99.95**

Pro 5 The Pro 5 is a single side version of the Pro Set. Some have requested a single side Boom Set so they can keep one ear open for room sounds or multiple transceiver monitoring. **HRO Price \$109.95**

GEOCHRON

Clock



Global Time Indicator

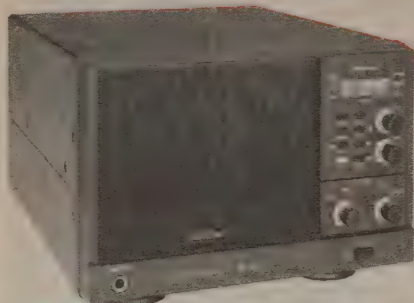
Suggested List Price: \$1395.95 – Call for HRO Special

Geochron is a true global time indicator showing the correct time everywhere in the world. It shows day of the week, date of the month, the sun's zenith position, and the distribution of daylight and darkness on the surface of the earth. The Geochron can be mounted on any flat surface like a picture or it can be recessed into the wall with optional flush mounting brackets. Dimensions 34" X 22". Geochron Standard Model is shown without minute indicator. Deluxe version with minute indicator is available. Select from various color finishes and trim.

SIGNAL PROCESSORS

Signal Processors / Noise Filters

Timewave Technology, Inc.

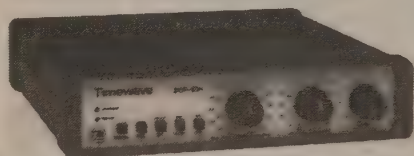


Pictured with optional speaker.

NEW!

DSP-59Y DSP Plug-In

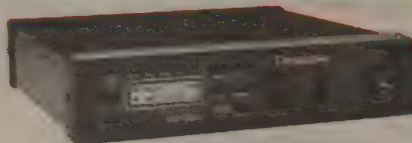
The DSP-59Y is a plug-in module that fits into the Yaesu SP-5 / SP-6 speakers. It has many of the features of the DSP-599zx. The DSP is field upgradable. It has an LCD display for Visible Memories™. CW filters from 10 Hz to 600 Hz with CW pitch shift. Voice filter up to 5 kHz wide for SSB, FM and AM shortwave listening. Features the new Hyperspeed DSP processor at 36.8 MIPS (the fastest) with 80 Kbytes of RAM on the CPU. Uses the existing 1/4" phone jack in the speaker cabinet, A/B switch for selectable input channels. It also has automatic notch and manual notch filters. Manual notch can be used in the CW mode. Variable noise aggressiveness. **HRO Price: \$TBA**



DSP-59+ Digital Signal Processor

The DSP-59 improves radio reception by reducing noise and interference. Digital signal processors provide filters for five base functions: 1) Random noise reduction; 2) Tone noise reduction; 3) Highpass filtering; 4) Low-pass filtering; 5) Bandpass filtering. The functions are combined to make five switch selectable modes.

The DSP-59 is compatible with all amateur radio transceivers and receivers. Simply connect it between the radio and the speaker. Requires 12-16 VDC to operate (not provided). **HRO Price \$259.95**



DSP-599ZX All Mode Noise Filter

This powerful noise and QRM filter combines a hyperspeed DSP and optical encoders to wipe out noise. Continuous filter tuning up to 5.4 kHz opens up wider bandwidth modes like shortwave, AM broadcast, and VHF/UHF FM. Heterodynes disappear, weak signals pop up from the noise, and the razor-sharp filters slice away QRM. The DSP RTTY demodulator pulls out solid copy when you barely hear a signal. Easily read all filter settings on the backlit alphanumeric LCD display. Test mode has a calibrated variable frequency, an amplitude audio oscillator, and an audio voltmeter.

- Hyperspeed DSP - 27 ns, 36.8 MIPS.
- 80 kB RAM on the DSP chip.
- Multiple memories.
- Programmable input sensitivity and line output level; front panel programming.
- Audio voltmeter and generator.
- Two selectable channels.

HRO Discount Price \$369.95



DSP-9+ Noise Filter

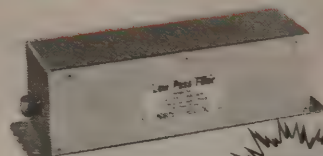
The DSP-9+ digital signal processor reduces random noise, eliminates heterodyne, and provides band-pass filtering. It reduces interference with an adaptive noise filter for SSB and AM. It eliminates heterodynes with multiple automatic notch filters. Sharp speech, data and CW filters provide 1.8, 2.4 and 3.1 kHz bandpass well as 100, 200 and 500 Hz bandpass. This is perfect for RTTY, AMTOR, PACTOR, HF Packet and CW. **HRO Price \$199.95**

DSP-9 Noise Filter

This is the basic filter for SSB and CW. Excellent for mobile operation. Random noise reduction and 3 sets of SSB and CW filters. Easy push button operation. Heterodyne elimination. **HRO Price \$199.95**

High/Low Pass Filters

BENCHER, INC.



YA-1

Made in
USA

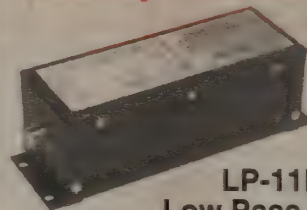
Benchers low-pass filter has exceptional specifications. Working range: 1.8-29 MHz. Impedance: 50 ohms. Power rating: 1.5 KW continuous, 5 KW peak. Attenuation: at least 80 dB at 54 MHz. **HRO Price \$59.95**



B&W manufacturers two low-pass filters with different power handling capability. Attenuation is 60 dB at 54 MHz.

Model	Power	Cut-Off	Price
FL-10/100	100 w	30 MHz	\$79.95
FL-10/1500	1500 w	30 MHz	\$79.95

Oak Bay Technologies



LP-11P Low Pass Filter

The LP-11P is a commercial quality low-pass filter. It operates from 1.8-30 MHz with an 11 pole inverse Chebishev design. The upper cutoff frequency is 41 MHz with 80 db attenuation by 51 MHz. Maximum power is 1000 watts. **HRO Price \$69.95**

VECTRONICS

High pass and low pass filters clean up your transmitted signal.

Model	Description	HRO Price
HPF-1	High Pass TV	\$19.95
LP30	1500W Low Pass	\$69.95
LP2500	2.5 kW Low Pass	\$129.95

NOISE FILTERS

Audio Enhancers



NRF-7

Filter / Noise Reducer

The NRF-7 provides no-delay filters for AMTOR, PACTOR and break-in CW. The filter uses state-of-the-art Digital Signal Processing (DSP) for sharp non-ringing CW and voice filters plus auto Notch and white noise reduction. It connects between the speaker output of your receiver or transceiver and an external speaker.

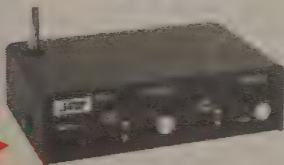
HRO Price \$239.95; AC Supply \$16.95

NTR-1

Wide-Band

Noise / Tone Remover

The NTR-1 general purpose audio processing unit provides noise reduction and multiple tone removal for AM / FM or other wideband signals. It provides narrow band operation for SSB, CW or data reception. It operates on the receiver audio output and contains a built-in audio amplifier. **HRO Price \$169.95**



ANC-4

Antenna Noise Canceller

Eliminates local POWER LINE noise before it enters the receiver to let you hear signals you did not know were there. Reduces any locally-generated noise typically by 50 dB. Usable between 100 kHz and 80 MHz. Short whip and wire antennas supplied with each unit. Rear panel connector for external noise probe. Auto transmit switch over up to 250W. Delay time internally selectable. Installed between the antenna and receiver. Europe CE Certified. Requires 12VDC @ 300 mA. **HRO Discount Price \$169.95**

SSTV-1

DSP Filter for SSTV

Use the SSTV-1 filter with Slow Scan TV to remove adjacent channel and in-band interference from SSTV signals. It clears noisy, distorted SSTV pictures with digital signal processing. **HRO Price \$159.95**



NIR-12 Dual DSP

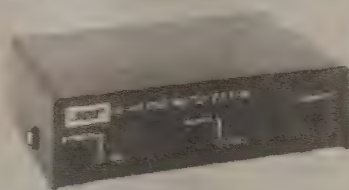
Noise Reduction & Filter

Features TWO 40 MHz DSPs to provide the most powerful and advanced DSP noise reduction unit available. Unparalleled performance, super selective FIR filters, fully adjustable filter center frequency and bandwidth (3400 Hz to 50 Hz); both Dynamic Peaking and Spectral Subtraction Noise Reduction; Spectral multi-tone NOTCH filter. All NIR-12 modes and functions may be used simultaneously. Use on all operating modes, including AMTOR and PACTOR. Installs between the receiver audio output and the external speaker. Europe CE Certified. Requires 12VDC @ 300 mA. **HRO Discount Price \$329.95**

SDK-12

NIR-12 Software Kit

Provides the interface module and software disk to allow programming of the NIR-12 DSP chips via the serial data bus on your personal computer. **HRO Price \$35.95**



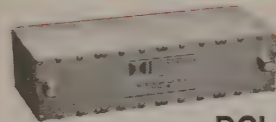
NF-60 Notch Filter

The NF-60 DSP Spectral Notch Filter automatically removes MULTIPLE heterodynes, tune-ups or CW / RTTY tones in 5 msec. The NF-60's DSP filter algorithm provides as many extremely narrow notch filters as there are tones. Connects between your transceiver or receiver speaker jack and an external speaker. **HRO Price \$155.95**
AC Supply HRO Price \$16.95

Bandpass Filters



DIGITAL COMMUNICATIONS INC.



DCI-146-4H Bandpass Filters

Eliminate intermod with these bandpass filters for 144, 220 and 440 MHz. Connect a filter between your VHF / UHF, base or mobile rig and antenna. Enjoy monitoring your favorite station without listening to the squawks and squeals of intermod. These filters reduce the strength of interfering signals while allowing the signals you want to hear to pass through at virtually full strength.

The filters are made to first-class specifications with silver-teflon connectors and extruded aluminum, copper and brass. In addition to the standard 4-pole filters, 7-pole and larger ultra-sharp filters are available. Contact HRO for more information.

The DCI-146-4H intermod filter for 2 meters is 12"X3"X5" and has UHF connectors. It can be custom tuned to almost any frequency between 100 and 900 MHz.

DCI-146-4H: HRO Price \$89.95

Telephone Filters



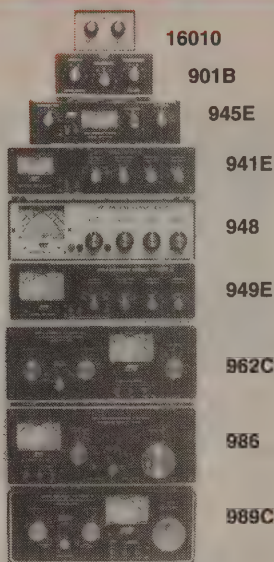
K-COM

Stop telephone RFI from transmitters in the 0.5 to 30 MHz range. These filters are fully assembled and come with instructions. Either model can be special ordered to cover 500 kHz to 3.0 MHz. Call for pricing and information.

Model RF-1 Single Line Filter for phones, answering machine, modems, fax and cordless phones. RJ-11 modular connectors. Can be special ordered for two-line phones. **HRO Price \$16.95**

Model RF-2 For inserting RFI filtering into telephone wiring: inside phone jacks, behind wall-mounted phones, etc. Solder-less connectors. **HRO Price \$10.95**

HF Tuners



MFJ-16010 Random Wire Tuner for all bands anywhere. 1.8-30 MHz. Turn any random wire into a transmitting antenna. Also for apartment, motel, camping. 200 watts. *HRO Price \$39.95*

MFJ-901B Versa Tuner is our smallest, most affordable 200 watt tuner. Good for matching solid state rigs to linears when space and budget are limited. 1.8-30 MHz, 4:1 balun. *HRO Price \$59.95*
MFJ-903 6M Tuner 50-54MHz. *HRO Price \$49.95*
MFJ-903 6M Tuner/Wattmeter 50-54MHz. *HRO Price \$79.95*

MFJ-945E Mobile Tuner This mobile tuner extends antenna bandwidth and eliminates the need to stop, go outside to readjust your mobile whip. Cross-needle meter allows hands-free operation. Handles 300 watts. It reads forward / reflected power in 50 / 300 and 5 / 50 watt ranges. Has on / off lamp switch. Efficient air wound inductor gives you lower losses and more watts out. 1000 volt capacitors. Covers 1.8-30 MHz. *HRO Price \$99.95*

MFJ-941E Versa Tuner II 300-watt tuner for 1.8-30 MHz. It has a lighted cross-needle meter and on/off switch. *HRO Price \$99.95*

MFJ-948 like the 949E but without dummy load. Eggshell white. *HRO Price \$119.95*

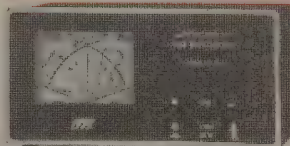
MFJ-949E Deluxe Versa Tuner II covers 1.8-30 MHz and handles 300 watts. Has built-in 50 ohm dummy load. Lighted peak reading cross-needle SWR / wattmeter. Reads forward / reflected power in 50 / 300 and 5 / 30 watt ranges. Front panel antenna switch selects 2 coax lines direct or through tuner, random wire / balanced line or dummy load. Efficient 12-position airwound inductor gives lower losses and more power out. Has 4:1 balun, 1000 volt capacitors. A black aluminum front panel matches your rig perfectly. *HRO Price \$149.95*

MFJ-962C Versa Tuner III for 1.8-30 MHz handles 1.5 kW PEP. Matches coax, random wire, or balanced line (built-in 4:1 balun). Six position antenna switch for 2 coax lines. *HRO Price \$219.95*

MFJ-986 Differential-T Tuner™ for 1.8-30 MHz, at 3 kW PEP. T-network with AirCore™ roller inductor and differential capacitor. Peak reading cross-needle SWR / wattmeter for 200 / 50 and 2000 / 500 watt ranges. Roller inductor spinner knob, 3 digit counter. 6 position antenna switch. 4:1 balun. *HRO Price \$279.95*

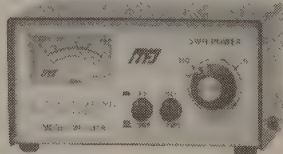
MFJ-989C Versa Tuner V heavy duty! Covers 1.8-30 MHz, 3 kW PEP, matches everything: coax fed, random wires and balanced lines. AirCore™ Roller inductor with spinner knob and 3-digit counter. Peak reading cross-needle SWR / wattmeter 200 / 2000 watt ranges. 50 ohm, 300 watt dummy load, 4:1 balun, 6 position antenna switch, tilt flip stand. *HRO Price \$329.95*

Wattmeters



MFJ-815B Deluxe Peak Reading SWR / Wattmeter covers 1.8-60 MHz. Illuminated cross-needle meter shows peak or average forward / reflected power and SWR at a glance. Two ranges: 200 / 2000 watts. Meter light requires 12 VDC. *HRO Price \$69.95*

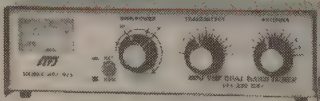
MFJ-817 144 and 440 MHz SWR / Wattmeter shows peak or average forward and reflected power and SWR at a glance. Two power ranges (200 / 20 forward and 50 / 5 reflected). Push button to select range, meter lamp, and peak or average power. Lamp uses 12 VDC or option 100 VAC MFJ-1312. *HRO Price \$79.95*



MFJ-812B VHF SWR / Wattmeter for 2 meters and 220 MHz. Reads SWR for forward and reflected power on 30 and 300 watt scales; SWR from 14 MHz through 220 MHz and relative field strength from 1 to 220 MHz. *HRO Price \$29.95*

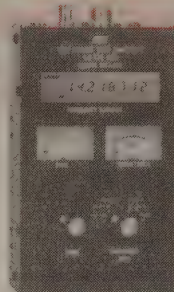
MFJ-864 HF / VHF / UHF (1.8-60MHz, 144 / 440MHz) Cross-needle SWR / Wattmeter. Read forward and reflected power and SWR simultaneously. Has separate HF and VHF / UHF directional couplers with SO-239 connectors. Power ranges 30 / 300 forward and 6/60 reflected. *HRO Price \$79.95*
MFJ-862 VHF / UHF SWR / Wattmeters. Same as MFJ-864 but covers 144 / 220 / 440 MHz. *HRO Price \$59.95*
MFJ-860 HF SWR / Wattmeters. Same as MFJ-862 but covers 1.8-60 MHz. *HRO Price \$39.95*

VHF / UHF Tuners



MFJ-921 Dual Band VHF Tuner covers 2 meters and 220 MHz. Convenient built-in VHF SWR / wattmeter. Handles 200 watts and matches a wide range of impedances. Excellent for mobile and base operation. SO-239 input / output connectors and wing nut post for your ground. Eggshell white and black aluminum cabinet. Comes with MFJ's one year unconditional guarantee. *HRO Price \$69.95*
MFJ-924 similar to the MFJ-921 but covers only the 440 MHz band. *HRO Price \$69.95*

SWR Analyzers



MFJ-259 SWR Analyzer with Resistance Meter covers 1.8-170 MHz continuously. Built-in 10 digit LCD frequency counter. Ball-bearing vernier reduction drive makes setting frequency easy and precise. Reading SWR is automatic. Plug in your antenna, set your SWR analyzer to the frequency and read the SWR. Four instruments in one: RF signal generator, 170 MHz frequency counter, SWR analyzer plus

the exclusive MFJ RF Resistance Meter. You can now measure RF feedpoint resistance up to 500 ohms at minimum SWR instantly on the MFJ exclusive side-by-side RF Resistance Meter and SWR Meter. Take the guess work out of building matching networks and baluns. Handheld size. Operate with batteries or optional AC adapter MFJ-1312B. *HRO Price \$239.95*

MFJ-249 like the MFJ-259 less resistance meter. *HRO Price \$199.95*

MFJ-29 Carrying Pouch for MFJ-249 / 259. *HRO Price \$19.95*

MFJ-29B Carrying Pouch for MFJ-259 w/window and knob control holes. *HRO Price \$19.95*

MFJ-66 Dip Meter Coils for MFJ-249 / 259. Set of two coils cover 1.8 thru 170 MHz. *HRO Price \$19.95*

MFJ-201 1.5-150 MHz Dip Meter. *HRO Price \$119.95*

Antenna Switches

MFJ-1702B Coax Antenna Switch. 2 positions plus center ground, 50 ohm. Rated to 500 MHz with 0.2 dB loss. Handles 2.5 kW PEP or 1 kW CW. 60 dB isolation at 300 MHz. 50 dB isolation at 450 MHz. Unused terminal grounds for static protection. *HRO Price \$21.95*



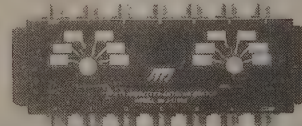
MFJ-1702BN has Type N connectors, goes to 1.1 GHz. *HRO Price \$31.95*



MFJ-1704 Coax Switch 4 positions plus center ground, 50 ohm. Rated to 500 MHz with 0.2 dB loss. Handles 2.5 kW PEP, 1 kW CW, 50 dB isolation at 500 MHz. Includes a replaceable lightning protection device that reduces lightning surges and static. *HRO Price \$59.95*

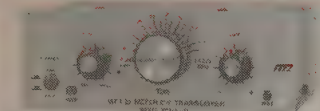
MFJ-1704N has Type N connectors. *HRO Price \$69.95*

MFJ-1701 Antenna Switch 6 positions, 50-75 ohm. Handles 2 kW PEP or 1 kW CW. 1.8-30 MHz. SO-239 connectors. Unused positions grounded. *HRO Price \$39.95*



MFJ-1700B Antenna / Transceiver Switch 1-6 antennas, 1-6 rigs. Tuner, SWR meter, linear etc. in line to operate any combination. 50-75 ohms. Handles 2 kW PEP or 1 kW CW. 1.8-30 MHz. SO-239 connectors. Unused positions grounded. *HRO Price \$64.95*

Transceivers



MFJ-9020 20 Meter CW Transceiver High performance superheterodyne receiver with sharp 8-pole crystal filter, RIT, AGC, vernier tuning, pure sinewave, side tone, speaker, headphone jack, adjustable semi-break-in, 5 watt RF. Covers lower 20 meter CW band. 6" x 6-1/2" x 2-1/4". **HRO Price \$189.95**

MFJ-9040 for 40 m: 7.000-7.150 MHz.

MFJ-9030 for 30 m: 10.100-10.150 MHz.

MFJ-9017 for 17 m: 18.068-18.110 MHz.

MFJ-9015 for 15 m: 21.000-21.200 MHz.

MFJ-412 plug-in Curtis chip keyer. **\$39.95**

MFJ-726 plug-in audio filter. **\$29.95**

MFJ-971 Portable HF tuner. **\$89.95**

SSB Transceiver

MFJ-9420X 20 Meter SSB Travel Radio™ It fits in your brief case. Work the world with a 12 watt output. With RF speech processing you focus all your power into a clear signal.

HRO Prices: MFJ-9420 \$229.95 (no mike)
MFJ 9420X \$259.95 (special w/mike)

MFJ-9440 40 meter SSB Travel Radio™
HRO Price \$229.95 (no mike)
MFJ-9440X \$259.95 (special w/mike)

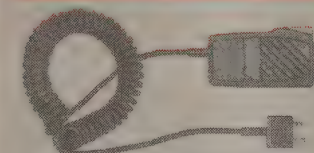
MFJ-9406 6 meter SSB Adventure Radio
HRO Price \$229.95 (no mike)
MFJ-9406X \$259.95 (special w/mike)

MFJ-906 6m tuner, SWR meter and bypass switch. **HRO Price \$79.95**

MFJ-903 6m tuner w/o bypass. **\$49.95**

MFJ-416 CW plug-in. **\$39.95**

HT Speaker / Mikes



MFJ Compact Speaker Microphones Leave your HT on your belt while talking or monitoring. The mikes feature a lapel/pocket clip so you can place it close to your ear. Each mike has an electret element plus an earphone jack.

MFJ-284 fits Icom, Yaesu. **\$24.95**

MFJ-286 fits Kenwood. **\$24.95**

MFJ Mini Speaker / Microphone A tiny mike for the newest HTs. Each is equipped with an electret element, wide range speaker, earphone jack, PTT and retractable cord. You get a swiveling lapel/pocket clip. Models with "L" have an "L" connector for HTs using this type. **HRO Price \$24.95**

MFJ-285 fits Icom, Yaesu, & some Alinco.

MFJ-285L MFJ-285 with an "L" connector.

MFJ-285W fits Icom IC-W2A.

MFJ-287 fits Kenwood.

MFJ-287L MFJ-287 with an "L" connector.

MFJ-283 fits the dual connector Alinco.

SWL Products



MFJ-1214PC Multimode transmits and receives WeFAX, FAX, RTTY, CW, and ASCII. Use

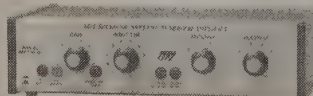
your computer and radio to receive, display and transmit full color news photos and incredible WeFAX weather maps with all 16 gray levels. Easy-to-use menu-driven software, cables, power supply, comprehensive manual and Jump-Start™ guide. Works with VGA, EGA or Hercules IBM compatibles with 512k RAM and 8 MHz or faster speeds. **HRO Price \$139.95**



MFJ-1020B Indoor Active SWL Antenna. Tuned circuit minimizes intermod, improves selectivity, reduces noise outside the tuned band. Use as preselector with external antenna. 0.3 to 30 MHz. Tune, Band, Gain, ON-OFF / Bypass Controls. Telescoping whip. Use 9 V battery (not included), 9-18 VDC or 110 VAC with optional MFJ-1312. **HRO Price \$79.95**

MFJ-1022 300 kHz to 200 MHz Active Antenna. Uses new noiseless feedback circuit to give you excellent low noise reception. Uses 9 V battery or 110 VAC with optional MFJ-1312B. **HRO Price \$39.95**

MFJ-1024 54" Outdoor Active Antenna covers 50 kHz to 30 MHz. Receives strong, clear signals, 20 dB attenuator, gain control, ON LED. Switch selects from two receivers and two antennas. Remote unit has 54 inch whip, 50 feet of coax and connector. 12 VDC or 110 VAC with optional MFJ-1312. **HRO Price \$119.95**



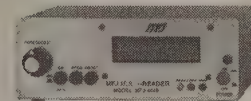
MFJ-959B Receiver Antenna Tuner / Preamp provides proper impedance matching so

you transfer maximum signal from antenna to receiver. Covers 1.6 to 30 MHz. 20 dB preamp with gain control. 20 dB attenuator prevents overload. Select from 2 antennas, 2 receivers. Uses 9-18 VDC or 110 VAC with optional MFJ-1312. **HRO Price \$89.95**

MFJ-1045C Receiver/Preset, 1.8-54 MHz **HRO Price \$69.95**

MFJ-956 LW/MW/SW Preselector / Tuner Boost your favorite stations while rejecting images, intermod and other phantom signals. It greatly improves reception of signals from .15 to 30 MHz. Connects between receiver and antenna. Has tuner bypass and ground receiver positions. **HRO Price \$39.95**

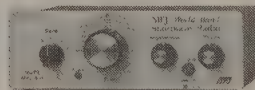
MFJ-1040B All Band Transceiver / Preselector lets you copy weak signals. Rejects out-of-band signals, images. 1.8-54 MHz. Up to 20 dB gain. Dual gate MOSFET, bipolar transistors for low noise, high gain. 20 dB attenuator, 2 antennas, 2 receivers. Coax and phone jacks. Bypass to 350 watts. Jack for PTT. Uses 9-18 VDC or 110 VAC with optional MFJ-1312. **HRO Price \$99.95**



MFJ-462B copies RTTY, ASCII, CW and AMTOR signals. Plugs into short-wave receiver earphone

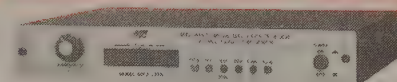
jack and displays messages on two-line, 16 character LCD display. No computer needed. **HRO Price \$169.95**

MFJ-8100 Shortware Regenerative Receiver covers 75/80/49/40/30/31/20/25/22/19/17/16/15/13 meter bands. Listen to AM, SSB, CW, WWV, RTTY and packet. Has smooth vernier reduction drive, bandswitch, volume and RF gain controls. Uses 9 volt battery. Has two headphone jacks.



MFJ-8100K Kit **HRO Price \$59.95**
MFJ-8100W Wired and tested **HRO Price \$79.95**

Packet / Multimode



MFJ-1278B With PACTOR built-in, the MFJ-1278B brings you state-of-the-art advances in color SSTV, Color FAX, 16 gray levels, modem, packet, AMTOR, RTTY, ASCII, CW, FAX, SSTV, Navtex and Contest Memory Keyer. Plus 32k RAM, mailbox expandable to 128k or 512k, free AC power supply. Host Mode, KISS interface for TCP/IP and MSYS compatibility, fast through-put anti-collision technology. Independent transmit level for each radio port, random code generator, lithium battery backup, RS-232 and TTL, serial ports, socketed IC's, tune-up command, peripheral I/O port, automatic serial numbering, programmable message memories, dual radio ports (each HF or VHF), CW paddle jack. Audio amplifier and speaker jacks to monitor CW sidetone. Transmit and receive audio and packet connect bell. New fully integrated instruction manual with Fast-Start™ booklet. 1 year No Matter What™ guarantee. **Suggested List Price \$299.95**

MFJ-1278BT Turbo like the 1278B but with the fast 2400 baud packet. **Suggested List \$369.95**

MFJ-1278BDSP same as MFJ-1278B with DSP filter installed. **Suggested List \$379.95**

MFJ-1270C Super TAPR Clone known as the most reliable TNC. Thousands used as digipeaters, nodes, BBS—many in 24-hours-per-day applications for years without a failure. VHF and HF use. Free AC power supply. WeFAX gives weather map, mailbox expandable to 128k. Upgrade to 2400 or 9600 baud. Host Mode, KISS interface. 1 year No Matter What™ guarantee. Uses 12 VDC or 110 VAC. **HRO Price \$114.95**

MFJ-1270CQ 9600 baud TNC has all the features of the MFJ-1270C plus 9600 baud. **HRO Price \$219.95**

MFJ-1276 all the features of the MFJ-1270C plus Pactor and 20 LED tuning indicator. **HRO Price \$149.95**

MFJ-2400 baud modem for MFJ-1278 and TNC. **HRO Price \$89.95**

MFJ-9600B baud G3RUH compatible modem for MFJ-1278 and TNC. **HRO Price \$99.95**

MFJ-780 DSP Filter Plug in for 1278 / 1278B **\$99.95**



MFJ-8621 Packet Only Data Radio. Run all data rates through 9600 baud right out of the box!

Up to 5 watts output. Supplied with 145.01 MHz crystal installed. Other crystals available. 5-pin DIN for TNC input. Requires 12VDC. **HRO Price \$119.95**

MFJ-8621X1 APRS, 145.79 MHz. **HRO Price \$139.95**

TNC / Mike Switch

MFJ-TNC / Mike Switch Just push a button to switch between your TNC and mike! Pre-wired for Kenwood/Icom/Yaesu rigs with 8-pin or modular phone jack.

MFJ-1272B / 1272M for MFJ TNC **\$39.95**
MFJ-1272BX / 1272MX for PK-232 **\$39.95**
MFJ-1272BYV / 1272MYV for KAM VHF **\$39.95**
MFJ-1272BYH / 1272MYH for KAM HF **\$39.95**
MFJ-1272BZ / 1272MZ for PK-88 **\$39.95**

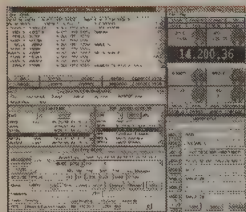
Packet Software

MFJ-1289 Multicom™ New 1278B software, bursting with features for IBM and compatibles: Gray level FAX, SSTV, color VGA Packet Picture, One-key Macros™, Call-Alert™, Auto-set™, Auto-router™, Packet Multiplex™, Multi-word™. RS-232 cable. **HRO Price \$59.95**

MFJ-1282B Starter Pack for C64 / 128 MultiCom64™. **HRO Price \$39.95**

MFJ-1287B Starter Pack for Macintosh MultiCom-Mac™. **HRO Price \$49.95**

Windows Software



MFJ station automation software finds DX, tunes your

rig and does your logging. With a few "point and clicks" of your mouse, this powerful WINDOWS software helps you find and identify on-the-air DX you need from PacketCluster networks; search your log to see if you have worked him before; automatically set up and tune your transceiver; work him with pre-stored messages. While you are working him you can log him; print his QSL card; search and update your awards and contest files. Logview Windows™, Packet Windows™ and Rig Windows™ are powerful ham radio automation software programs that make operation fun, DXing competitive and not-so-fun detail effortless. Use them as an integrated package that unifies your transceiver, packet TNC and logging functions into a fully automated station. You can use them individually as stand alone programs and add other modules as you need them.

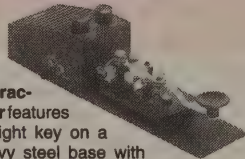
Model	Description	HRO Price
Individual Packages		
1681	Logview Windows	\$69.95
1682	Packet Windows	\$29.95
1683K	Rig Windows Kenwood	\$29.95
1683Y	Rig Windows Yaesu	\$29.95
1683I	Rig Windows Icom	\$29.95
Complete Package		
1680K	Kenwood	\$99.95
1680Y	Yaesu	\$99.95
1680I	Icom	\$99.95

MFJ's Transceiver-to-Computer Interface Cable has RS-232 serial interface built-in. Plug between your transceiver and computer serial ports and you have computerized control of you rig through Rig Windows™ software.

Model	Description	HRO Price
5383K	For most Kenwood rigs	\$49.95
5383Y	For most Yaesu rigs	\$49.95
5383YB	Yaesu mini 6 pin din	\$49.95
5383I	For most Icom rigs	\$49.95

Code Tutor

MFJ-411 Pocket Size Morse Tutor. Learn from zero code speed to Extra Class with customized code practice. Random, QSO mode, word recognition mode. Easy-to-use menu. Uses 9V battery. **HRO Price \$79.95**



MFJ-557 Deluxe Code Practice Oscillator features a Morse straight key on a non-skid heavy steel base with volume control, tone control, earphone jack, external speaker plug, 9 V battery (not included) or optional AC power supply. Built-in speaker, adjustable contacts. **HRO Price \$24.95**

Keyers

MFJ-422C

Keyer/Benchner

Paddle Combo makes a small, attractive unit that is a pleasure to use. Iambic keying, adjustable weight and tone, front panel volume and speed controls (8-50 WPM), dot-dash memories, sidetone, speaker and automatic or semi-auto / tune modes. Use 9 V battery or 110 VAC with optional MFJ-1305 **HRO Price \$134.95**
MFJ-422CX Keyer only. Mount to your Benchner paddle. **HRO Price \$79.95**



MFJ-407C Deluxe Electronic Keyer Dot-dash memories, self-completing dots and dashes, jam-proof spacing, RF proof, instant start. Single squeeze, or straight key. Controls include speed, weight, tone and volume. ON/OFF, tune auto / semi-auto, built-in speaker, 9V battery (not included) or 110 VAC with optional MFJ-1305. **HRO Price \$69.95**

MFJ-401C Econo Electronic Keyer II. Similar to MFJ-407C but with external speed and volume controls, internal weight and tune controls. Use 9V battery (not included) or 110 VAC with optional MFJ-1312B. **HRO Price \$49.95**

MFJ-492 Menu

Driven Memory

Keyer. No keypad, no complex sequences to remember. Just



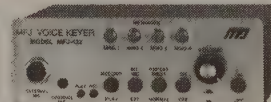
follow the menu. From the menu you can save and play messages, decrement serial numbers, set speed, weight, sidetone, iambic, semi-auto, handkey, message queue, transmitter tune, keying output on/off—select iambic A or B, reverse paddle, Morse trainer and store starting serial number. Commands can also be keyed from the paddle. Holds 192 characters in four soft sector message memories. Expandable to more than 8000 characters in eight message memories. Memories have lithium battery backup. Front panel controls for speed (5-100 WPM) and volume. Built-in speaker for side tone. Direct and grid block keying output. Uses 9 V battery or optional 110 VAC with MFJ-1312B. **HRO Price \$99.95**

MFJ-493. Like MFJ-492 but with 32K characters of memory. IBM keyboard input makes MFJ-493 into a keyboard. QSO simulator included. **HRO Price \$139.95**
MFJ-490 Memory Keyer / Benchner Combo. Has all the features of the MFJ-492 except memory expansion. **HRO Price \$164.95**

MFJ-490X. MFJ-490 less the Benchner paddle. **HRO Price \$109.95**

MFJ-451 Morse Keyboard. Stand alone CW keyboard. 200 character type ahead buffer and two 100 character message memories. Use 12 VDC or optional MFJ-1312B. **HRO Price \$99.95**

MFJ-452 like the MFJ-451 with 2-line 16 character LCD display. **HRO Price \$129.95**



Built-in speaker. Mike jack and mike cable. Has 4 nonvolatile message memories. Uses 9V battery or 110 VAC with optional MFJ-1312B. **HRO Price \$109.95**

MFJ-432 Voice

Keyer.

Lets you gain an unfair advantage during a contest by cloning your voice.

Station Accessories



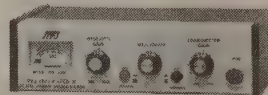
MFJ-784B DSP Filter automatically eliminates heterodynes, reduces noise and interference simultaneously on SSB, AM, CW, packet, AMTOR, PACTOR, RTTY, WeFAX, FAX, weak signal VHF, EME, satellite. MFJ's tunable FIR linear phase filters minimize ringing, prevent data errors and have "brick wall" filter response with up to 60 dB attenuation just 75 Hz away. Only MFJ gives you 5 tunable DSP filters. Tune lowpass, highpass, notch, and bandpass including optimized SSB and CW filters. Vary the bandwidth to pinpoint and eliminate interference. Only MFJ gives you 5 factory preset filters, 10 programmable preset filters you can customize. New MFJ-784B features: tunable Spotting Tone™—an MFJ innovation—accurately tunes CW filter even in the narrowest bandwidth; MFJ's exclusive Adaptive Tuning™—center frequency tuning automatically becomes finer as you narrow bandwidth—makes extremely narrow filters easy-to-use; an improved automatic notch with variable aggressiveness; new quieter audio amplifier gives full 2.5 watts output; speaker on/off button; phone always active; accurate easy-to-use input level indicator; Filter Talk™ function sends precise filter settings in Morse code, automatically bypasses during transmit for monitoring CW, sidetone, voice or data by sensing PTT line; adjustable line level output. 12VDC or 110VAC w/optional MFJ-1315. **HRO Price \$239.95**



MFJ-1116 Deluxe Multiple DC Power Outlet. 8 outlets for powering accessories. Connects to 12 VDC power VDC power supply, monitors DC voltage with voltmeter, power switch and 15 amp fuse. 5-way binding posts with standard spacing for dual banana jacks. **HRO Price \$44.95**

MFJ-1112 like MFJ-1116 without ON/OFF switch, voltmeter and fuse. 6-pair outlets. **HRO Price \$29.95**

MFJ-1118 High Current Multiple DC Outlet. Gives you two HF and/or VHF transceivers and six or more accessories from your transceiver's main 12 VDC power supply. Two pair of 30 amp binding posts RF bypassed and individually fused for transceivers. Six additional pair of binding posts are fused and handle a total of 15 amps. ON/OFF power switch and LED power indicator. 0-25 V monitor meter. 6 feet, eight gauge cable with ring tongue terminals. **HRO Price \$64.95**



MFJ-624D Deluxe

Hybrid Phone Patch

Has prewired micro-telephone connector, programmable for most

radios. VOX / push-to-talk, RF pi-filters, and PC board construction eliminates RF feedback. VU meter, separate transmitter and receiver gain controls, null control, standard phone connection—RJ-11, jacks for speakers, audio in and audio out. Use 12 VDC, 9 V battery (not included) of 110 VAC with optional MFJ-1312. **HRO Price \$89.95**

MFJ-931 Artificial RF Ground effectively places your rig near actual earth ground potential. Connects between your rig and random length of wire of a connecting ground wire. Tune for maximum ground current using the built-in RF ammeter. Covers 1.8 to 30 MHz. **HRO Price \$79.95**



MFJ-914 Auto Tuner

Extender

Extend the matching range of your automatic antenna tuner. Tune any antenna. No pre-tuning and no manual tuner needed. **HRO Price \$59.95**

MFJ-212 Tune your antenna tuner without transmitting. Use with all transceivers 160-6 meters. **HRO Price \$79.95**

Clocks

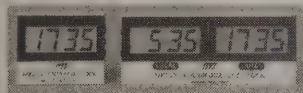


MFJ-114 Giant LED 24/12 Clock. Four huge 2.3" red LED digits. Readable from 100 feet away. Wall mount or place on desk top with flip stand. User selectable 12 or 24 hour display format. Battery backup (batteries not included). 110 VAC operation. **HRO Price \$39.95**



MFJ-105B 24 Hour Quartz Wall Clock. Handsome black. 10" diameter face, sweep second hand. Uses single "A" battery (not included). **HRO Price \$19.95**

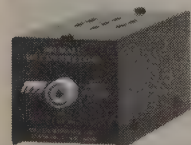
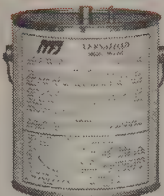
MFJ-112 DXer's World Map Clock. Push-buttons let you move east and west on the map display to the time at any QTH in the world. Time display hour/minute/second, week, month, year, and day of the week. User selectable for 12 or 24 hour display format. **HRO Price \$24.95**



MFJ-107B / 108B 12/24 Hour Clocks Huge 5/8 inch bold LCD digits let you see the time from anywhere in your shack. Choose from the dual clock that has UTC and local display or the single 24 hour clock. Mounted in brushed aluminum frame. Easy set. **HRO Prices MFJ-108B \$19.95; MFJ-107B \$9.95**
MFJ-116 LED Display 12/24 Hour Clock (similar in size to MFJ-108B) **HRO Price \$24.95**

Dummy Loads

MFJ-250 1 kW Dummy Load 50 ohm oil-filled dummy load. Low VSWR to 400 MHz. Rated 1 kW CW or 2 kW PEP for 10 minutes. 1/2 rating for 20 minutes. 200 watt CW or 400 watt PEP continuous. Includes high quality transformer oil (no PCB). **HRO Price \$49.95**



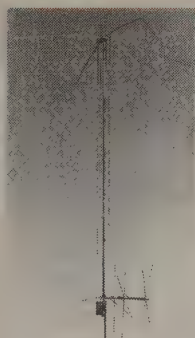
MFJ-260C VHF/HF Air Cooled Dry Dummy Load. Covers 0-650 MHz. Handles 300 watts for 30 seconds. Has derating curves. SO-239 connector. **HRO Price \$29.95**

MFJ-264 UHF/VHF/HF Dry Dummy Load covers up to 650 MHz, usable to 750 MHz. Rated 1.5 kW for 10 seconds, 100 watts continuous. **HRO Price \$59.95**



MFJ-704 Low Pass Filter suppresses TVI, RFI, telephone and other interference. Handles full legal power with 2:1 SWR load for 1.8-30 MHz. **HRO Price \$39.95**

HF Antennas



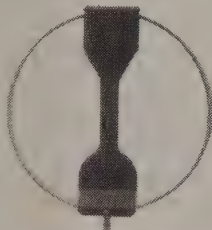
HF Vertical Antenna No Radials

MFJ-1798 Halfwave Vertical. No radials needed. Covers 10 bands: 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 meters. No ground radials or ground needed because of the effective counterpoise that is 12 feet across. Mount it from ground level to roof top. The feed line is isolated from the antenna using MFJ's Air-Core™ balun.

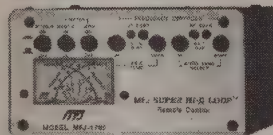
Achieves full-sized performance with full size radiators for 2-20 meters and high efficiency end-loading for 30, 40 and 75/80 meters. UPS shippable.
MFJ-1796 6 Band Vertical Sugg. List \$199.95
MFJ-1798 10 Band Vertical. Covers 75/80, 40, 30, 20, 17, 15, 12, 10, 6, 2 meters. Sugg. List \$269.95

Super Hi-Q Loop 36" Diameter

MFJ-1786 Super Hi-Q Loop Antenna. Only 36 inches in diameter, it is the smallest high efficiency 10 to 30 MHz continuous coverage antenna ever made for ham radio. Features a round conductor that is more efficient than a flat strip. No control cable needed.



All welded construction. Welded butterfly capacitor with no rotating contacts. It is totally portable. Built-in mounting bracket makes it easy to mount vertically or horizontally. Handles nominal 150 watts with low SWR.



Remote control (included) with Automatic Band Selection, fast and slow tune, audio alert and

built-in cross-needle SWR/wattmeter. Uses internal AA batteries (not included), 12 VDC or 110 VAC with optional MFJ-1312. Sugg. List \$299.95

MFJ-1782 Super Hi-Q Loop Antenna. Same as MFJ-1786 but with standard controller. Does not have SWR / wattmeter or Auto Band Selection. Suggested List Price \$269.95

MFJ-1778 G5RV. All bands 80 through 10 meters. Suggested List Price \$29.95

Portable Antenna



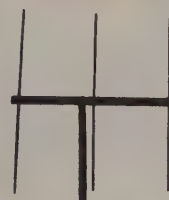
MFJ-1621 Portable Antenna lets you operate in almost any location. Works 40, 30, 20, 17, 15, 12 and 10 meters by using a telescoping whip antenna that extends to 54 inches. Self-standing cabinet, built-in antenna tuner, field strength meter and 50 feet of RG-58 coax cable. Handles 200 watts. **HRO Price \$79.95**

VHF Antennas

MFJ-1750 5/8 Wave Ground Plane 300 watt antenna for 2 meters gives you maximum possible gain of any single element antenna. Shunt fed matching network for lowest SWR over entire 2 meter and bleeds off unwanted static. Rapid-tune Radiator™, single U-bolt mounting, strong lightweight aluminum construction protected by Permanent Molecular Bonding Technology™ and 1 year No Matter What™ guarantee. **HRO Price \$19.95**
MFJ-1752 220 MHz **HRO Price \$19.95**
MFJ-1740 1/4 Wave Ground Plane **HRO Price \$12.95**



MFJ-1768 Dual Band 144/440MHz Yagi. 5 elements on 440MHz and 4 elements on 2 meters. Uses MFJ's exclusive dual band balanced feed system. Prevents pattern skewing and gives low SWR over both bands. Provides the convenience of feeding two Yagis with a single coax. Light weight (2 lbs.), easy to assemble. **HRO Price \$69.95**



MFJ-1763 Portable 3 Element Beam for 2 meters. Easy to store, elements simply screw into the boom. Extra gain and directivity. Compact 2-3/4 foot boom gives you a calculated gain within 1 dB of a four element Yagi. Thick elements maintain high gain and directivity over virtually the whole 2 meter band. A ferrite choke balun gives you excellent feedline decoupling. Coax coupling reduced by mounting the SO-239 connector behind the reflector. Mounts vertically or horizontally. Great for packet. Protected by Permanent Molecular Bonding Technology™, 1 year No Matter What™ guarantee. Weighs 2 pounds, single U-bolt mounting. **HRO Price \$39.95**

MFJ-1730 Pocket Roll-UP™ gets base station performance on the go with this half-wave 2 meter J-antenna that sticks in your pocket. The perfect gain antenna for traveling. Omni-directional and significant gain over a 1/4 wave. Protected by 1 year No Matter What™ guarantee. **HRO Price \$14.95**



MFJ-1724B Mobile Magnetic Mount Dual Band antenna gives you quarter wave stainless steel whip for 2 meters and 440 MHz, coax and connector. Low SWR, 200 watts. **HRO Price \$14.95**

MFJ-1728B Mobile Magnetic Mount 5/8 wave 2 meter antenna, covers 144-174 MHz, low SWR, 300 watts. **HRO Price \$24.95**

MFJ-1729 Mobile Magnetic Mount super gain dual band antenna. **HRO Price \$29.95**



MFJ-1734 Dual Band Glass Mount 144 / 440 MHz antenna gives 2.6 dB gain on 2 meters and 6.3 dB on 440 MHz. Low SWR on both bands. Free BNC adapter is included for handhelds. **HRO Price \$39.95**

MFJ-1738 2-meter Glass Mount Antenna handles 500 watts with 2.6 dB gain, low SWR over entire 2 meter band. **HRO Price \$29.95**

BATTERY PACKS

Batteries

Duracell

Many of the accessories and radios offered in the catalog require batteries for their operation. HRO now carries the popular Duracell batteries. Ask your HRO representative to include these in your next order.

Model	Description	HRO Price
AA	AA Alkaline Battery Cell	\$0.79
9 Volt	9 Volt Alkaline Battery	\$2.49
C	C Size Alkaline Battery	\$1.29
D	D Size Alkaline Battery	\$1.29

Dummy Loads

VECTRONICS

Each of these dry dummy loads will handle short term transmissions at the rated power levels.



Model	Max Freq	Max Pwr	HRO Price
DL-300M	150 MHz	300 W	\$44.95
DL-650M	650 MHz	1500 W	\$69.95
DL-2500	150 MHz	2500 W*	\$189.95

* Fan cooled

Soldering Station

Weller

WTCPT Soldering Station

Call for HRO Discount Price

Weller offers a soldering station that is a must for every ham shack.

- Transformer powered with macro style, low voltage, temperature controlled soldering iron.
- Special "closed loop" method of controlling maximum tip temperature.
- Power unit housing features impact resistant plastic.
- Quick disconnect plug for iron and lighted on / off switch.
- Separate conductor grounds iron tip and terminates at third pin of power cord.
- Uses PT series tips and operates at 600°F, 700°F and 800°F.

PERIPHEx

Replacement Batteries

Periphex makes a collection of replacement battery packs for all popular handheld radios. HRO stocks these packs to provide you superior battery performance at an affordable price.

The Super models offer additional operating time when compared to manufacturer provided batteries. Depending on the battery model and radio, an additional 15% to 100% operating time can be achieved.

Examine the tables below and select the pack which best suits your needs.

Most Alinco Radios

Model	Volts (DC)	Capacity (mah)	HRO Price
EBP-22S	12	800	\$65.95
EBP-24S	7.2	1500	\$62.95
EBP-34	8.4	1200	\$35.00
EBP-34S	4.8	1600	\$49.00
EBP-35	7.2	900	\$50.00
EBP-36	9.6	650	\$55.00

Most Icom Radios

Model	Volts (DC)	Capacity (mah)	HRO Price
BP-7S	13.2	1200	\$65.95
BP-8S	9.6	1200	\$65.95
BP-83S	7.2	750	\$43.95
BP-84S	7.2	1400	\$63.95
BP-85S	12	800	\$76.95

Most Kenwood Radios

Model	Volts (DC)	Capacity (mah)	HRO Price
PB-7S	7.2	1400	\$59.95
PB-8S	12	800	\$59.95
PB-13S	7.2	1200	\$49.95
PB-14S	12	400	\$60.95
PB-17	12	800	\$49.95
PB-18	7.2	1400	\$49.25
PB-33	6	1200	\$49.00
PB-34	9	600	\$54.00

Most Yaesu Radios

Model	Volts (DC)	Capacity (mah)	HRO Price
FNB-12	12	600	\$54.95
FNB-14S	7.2	1400	\$59.95
FNB-26S	7.2	1400	\$65.95
FNB-27S	12	800	\$65.95
FNB-33	4.8	1400	\$53.25
FNB-35	7.2	600	TBA
FNB-38	9.6	650	\$66.90

MAHA

Nickle Metal Hyride Replacement Battery Packs

Maha offers a technological breakthrough of nickel metal hydride for the ham radio battery pack. The advantages are:

- No memory effect.
- Long life and 50%-100% increase in capacity over same size NiCADs.
- Light weight and small size.
- Environmentally friendly.

Standard

Model	Volts (DCV)	Capacity (mah)	HRO Price
MH-CNB-152	12	900	\$59.95
MH-CNB-153*	7.2	1200	\$49.95

*Same size as CNB-151

Kenwood

Model	Volts (DCV)	Capacity (mah)	HRO Price
MH-PB-8	12	1200	\$62.95
MH-PB-17	12	900	\$69.95
MH-PB-18	7.2	1200	\$49.95
MH-PH-32	6	900	\$47.95
MH-PB-33	6	1200	\$49.95
MH-PB-34	9.6	900	\$57.95

Icom

Model	Volts (DCV)	Capacity (mah)	HRO Price
MH-BP-7	13.2	900	\$69.95
MH-BP8	8.4	1200	\$59.95
MH-BP-8H*	8.4	1800	\$69.95
MH-BP-83	7.2	1200	\$49.95
MH-BP-132B	12	1200	\$59.95
MH-BP-132G	12	1200	\$59.95

*Same size as MH-BP-8 and ICOM BP-8

Yaesu

Model	Volts (DCV)	Capacity (mah)	HRO Price
MH-FNB-12	12	900	\$59.95
MH-FNB-17	7.2	900	\$49.95
MH-FNB-27	12	900	\$59.95
MH-FNB-31	4.8	650	\$49.95
MH-FNB-38	9.6	650	\$59.25
MH-FNB-41	9.6	900	\$55.95

Desktop Rapid Chargers

Model	Compatible Battery Packs	HRO Price
MH-101-Y1	Yaesu FNB 10 to 17, 25 to 27	\$69.95
MH-101-Y2	Yaesu FNB 31 to 38	\$69.95
MH-101-Y3	Yaesu FNB 40 to 42	\$69.95
MH-101-I1	Icom BP 131, 132, 157, 160, 174	\$69.95

QUANTUM INSTRUMENTS

All-day Battery Power For Your Handheld!



The Quantum Ham Battery (model QHB) can power most models of handi-talkies 3 to 5 times longer than nicad packs. The battery delivers 12 volts for a 5 W output from most HT's. The modular battery is adaptable to many types of equipment. The power pack contains the rechargeable battery and electronics. Adapters with coiled cords connect the high performance power pack to an HT or other equipment.

One Ham Battery can be used for different equipment by switching adapters. This feature means a user need purchase only a new adapter when upgrading or changing to another HT instead of purchasing a whole new battery and chargers.

The Ham Battery is housed in a compact leatherlike case which can be belt-attached or hooked to a shoulder strap. Inside is a powerful 2.1 amp hour, high rate 12 volt rechargeable battery. The cells are sealed lead types. These can be recharged fully and reliably to 100% capacity at all times. The three-LED "fuel gauge" lets you know how much of the battery charge remains.

Included with the Ham Battery are a built-in automatic circuit breaker, recharge indicator and regulator. A charger is supplied with the battery. There are two output sockets for powering two pieces of equipment at once. **HRO Discount Price \$129.95**

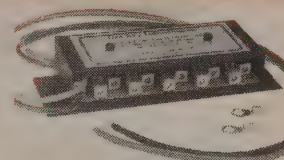
Quantum Battery Adapters and Accessories

Model	Description	HRO Price
HB3	Icom "S" Series, IC-24AT, W2A, IC-2SRA, IC-4SRA, IC-R1.	\$35.95
HB4	Icom "A" & "G" series except IC-24AT.	\$35.95
HB5	Kenwood TH-205AT, 215A, 225A, 315A, 415A.	\$35.95
HB6	Kenwood TH-25, 26AT, 45AT, 46AT, 75A, 77A.	\$32.95
HB7	Yaesu FT-103R, 109R, 203R, 209R/RH, 703R, 709R, 727R.	\$35.95
HB9	Yaesu FT-23R, 33R, 411, 470, 73R, 811, 911.	\$35.95
HB10	Vehicle socket adapter.	\$24.95
HB11	Alinco DJ-160, 460, 560T/E.	\$45.95
HB13	Icom P Series IC-P2/3/4AT.	\$45.95
HB16	Kenwood TH-27/28/47/48A/78A, Yaesu FT-416/816.	\$45.95
HB19	Yaesu FT-26/76/415/815/530.	\$45.95
HB20	DC Plug Set.	\$28.95
HB21	Alinco DJ-F1T, DJ-F1T-HP.	\$45.95
HB31	Alinco DJ-580T/DJ-180T.	\$45.95
HB36	Vehicle fast charger.	\$81.95
RA17	AC adapter for HB36.	\$39.95
HB0	Coiled power cord for QHB.	\$21.95
HB40	Quantum shoulder strap.	\$14.95
HBCA-4	Standard C228/528/628A.	\$45.95
HBCA-5	Standard C168/468A.	\$45.95

HELPFUL STUFF

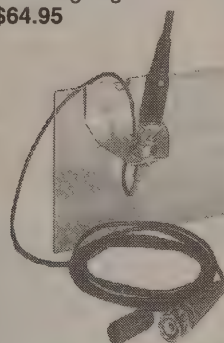
Oak Bay Technologies

High Current Power Strips



PS-612M

This high current 12 VDC power strip has heavy-duty steel housing construction with current handling up to 50 amps. It has circuit breaker outputs, 3-30 amp and 3-20 amp. It is perfect for HF radios or other high power equipment. Comes with 4 feet of #8 guage wire with ring lugs. **HRO Price \$64.95**



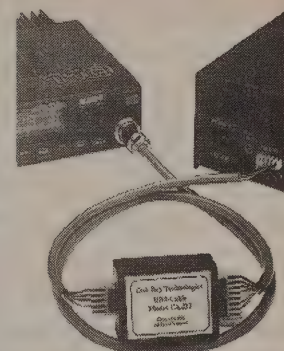
Rubber Duck Mount

AM-101B

The perfect temporary antenna mount for emergencies, rental cars or vacations. Made of stainless steel, it has 15 watt power capability. Just slip over your window glass and attach your handheld antenna to the BNC connector. 6 feet of RG-174U coax provided. **HRO Price \$24.95**

PS-101

This high current 12 VDC power strip for the ham shack has heavy-duty steel housing construction with current handling up to 50 amps. It has 5 fused outlets, 2-30 amp and 3-20 amp. It is perfect for HF radios or those high power VHF/UHF amplifiers. **HRO Price \$79.95**



Universal Packet Cable

CA-232-U

UNI-Cable™ provides interface between all popular TNCs and VHF/HF transceivers. No soldering is required. It can be easily programmed by the user for 8 PIN microphone connectors. **HRO Price \$34.95**

Packet Cables

RB Enterprises

Connect your packet rig and radio with one of these pre-made cables.

Model	Description	Radio DIN (Pins)	HRO Price
MRJ-I	MFJ/AEA to Icom 281/2000	5	\$19.95
MRJ-K	MFJ/AEA to Kenwood modular	5	\$19.95
MRJ-Y	MFJ/AEA to Yaesu modular	5	\$19.95
KD-12	Kantronics mini-DIN 1200	6	\$19.95
KD-96	Kantronics mini-DIN 9600	6	\$19.95

POWER SUPPLIES



The DM-1350 is a 35 amp supply with dual meters. Provides up to 30 amps. 110 VAC.



The **PS-55** is a standard duty supply with cabinet styling to match IC-735/728/729. The heavy-duty **PS-30** station supply can operate several base station units. The **PS-35** is an internal supply designed to be installed in the IC-751 or selected VHF / UHF base transceivers. The **PS-85** is specially designed for the IC-706 compact HF rig.

KENWOOD

The **PS-31** goes with the TS-790A. The **PS-33** and the **PS-53** are especially for the TS-450S and TS-690S. The PS-40 is a compact, switching supply for high current application. The **PS-52** is Kenwood's largest. It is designed for the TS-850 but it will run all Kenwood 12 VDC radios.



Yaesu power supplies are designed primarily for use with their HF rigs. The **FP-800** matches the FT-900 / 840 and contains a built-in speaker.

SAMLEX AMERICA



SEC 1212 Switching Mode Base Station Power Supply

The SEC1212 was designed specifically for use as a base station power supply for land mobile radios. The supply uses MosFet-based Switchmode technology for high reliability, high efficiency and minimum size and weight. The design reduces output ripple to levels previously available only from bulky and less efficient linear power supplies. It will deliver high power with no RFI. Current limiting and safe operating area circuitry protect the transistors and a crowbar circuit protects any devices powered by the SEC1212 from excess voltage. The supply operates from 90-130 volts and produces 12 amps continuously, 15 amps at a 50% duty cycle for 5 minutes. Weight is only 3 pounds. The SEC 1212 has a three year warranty. **HRO Price \$79.95**



Astron's solid-state electronically regulated **Power Supplies** have fold-back current limiting to protect from excessive current. Heavy duty heat sink. Output voltage: 13.8 VDC \pm .05 volts. 220 V supplies available on special order at slightly higher price.

RS-A Series Standard power supply with on / off switch. Voltage may be adjusted internally.

RM Series 19" x 5 1/4" rack-mount power supplies available with or without meters and may be variable. The new RM-60 comes with or without meters.

RS-M Series Power supply with front meters. One is for voltage and the other current.

VS-M Series Power supply with separate volt and amp meters. Adjustable output voltage: 2-15 volts.

SL Series Slim Line design for low-profile looks.



Power Supplies

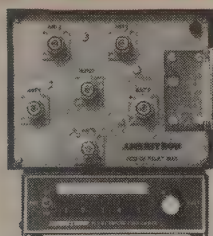
Brand	Model	Cont. Duty 13.8 VDC	Intermit Duty	Height in	Width in	Depth in	Weight lbs	Sugg. List
Alinco	DM-1350	30 A	35A	5.5	9.38	9	20	CALL
Astron	RS-4A	3 A	4 A	3.75	6.5	9	5	\$51.95
	RS-7A	5 A	7 A	3.75	6.5	9	9	\$68.95
	RS-10A	7.5 A	10 A	4	7.5	10.75	11	\$84.95
	RS-12A	9 A	12 A	4.5	8	9	13	\$99.95
	RS-20A	16 A	20 A	5	9	10.5	18	\$121.95
	RS-35A	25 A	35 A	5	11	11	27	\$197.95
	RS-50A	37 A	50 A	6	13.75	11	46	\$285.95
	RS-70A	57 A	70 A	6	13.75	13.75	48	\$339.95
	RS-12M	9 A	12 A	4.5	8	9	13	\$159.95
	RS-20M	16 A	20 A	5	9	10.5	18	\$144.95
	RS-35M	25 A	35 A	5	11	11	27	\$204.95
	RS-50M	37 A	50 A	6	13.75	11	46	\$314.95
	RS-70M	57 A	70 A	6	13.75	12.12	48	\$372.95
	RM-35A	25 A	35 A	5.25	19	12.5	38	\$309.95
	RM-50A	37 A	50 A	5.25	19	12.5	50	\$326.95
	RM-60A	50 A	55 A	7	19	12.5	63	\$422.95
	RM-35M	25 A	35 A	5.25	19	12.5	38	\$318.95
	RM-50M	37 A	50 A	5.25	19	12.5	50	\$354.95
	RM-60M	50 A	55 A	7	19	12.5	63	\$467.95
Icom	VS-20M	16 A	20 A	5	9	10.5	20	\$170.95
	VS-35M	25 A	35 A	5	11	11	29	\$238.95
	VS-50M	37 A	50 A	6	13.75	11	46	\$330.95
	SL-11A	7 A	11 A	2.75	7.62	9.95	11	\$90.95
	SL-15R	12 A	15 A	2.75	7.62	9.95	14	\$119.95
	SS-25	20 A	25 A					\$161.95
	SS-30	25 A	30 A					\$186.95
	PS-30	20 A	25 A	4.3	9.5	11.8	15.6	\$470.95
	PS-35	17 A	20 A	*	*	*	6	\$239.95
	PS-55	15 A	20 A	4.2	7.2	10.5	17.5	\$345.95
Kenwood	PS-85	15 A	20 A					\$299.95
	PS-31	20 A	22.5 A	4.7	6.9	12.2	17.4	\$219.95
	PS-33	20.5 A	22.5 A	6.81	3.78	11.66	15.4	\$239.95
	PS-40	20 A	23 A	2.38	7.1	8.88	4.5	\$229.95
	PS-52	22.5 A	22.5 A	4.25	7	12.25	16	\$289.95
Samlex	PS-53	22.5 A	22.5 A	6.81	3.78	11.66	15.2	\$269.95
	SEC1212	12 A	15 A	2.2	7	8.25	3	\$99.95
Yaesu	FP757HD	15 A	20 A	3.7	9.5	9.3	3.2	\$334.95
	FP-800	20A	20A	3.66	9.4	9.3	15	\$309.95

* Internal Supply (220 volt versions of some models available at additional cost by special order. Contact HRO for details.)

SWITCHES / SURGE PROTECTORS

Remote Coax Switches

AMERITRON



**RCS-8V
DC-UHF
Remote
Coax
Switch**

Replace 5 coax feedlines with this one switch. Low SWR to 450 MHz. Low loss. Rated at 5 kW to 30 MHz, 1 kW at 150 MHz. Weatherproof box mounts outdoors on your tower or mast. Attractive control unit sits on your operating desk. **Suggested List RCS-8V \$149.95; RCS-8VN with "N" connectors \$169.95.**

RCS-4 is a 4 position HF coax switch similar to the RCS-8V. No control cable is required. Handles 2500 watts PEP. **Suggested List 134.95.**

Cable Checker

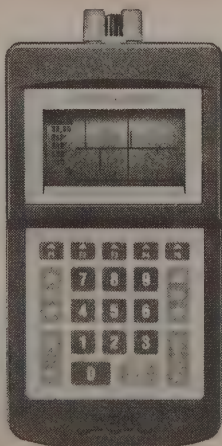


CableMate™

CableMate™ is a time domain reflectometer which allows you to locate faults in a length of cable from 16 to 2000 feet. It detects damage and tells you how many feet down the cable it is to the damage. CableMate™ can locate two faults less than 10 feet apart.

- Supports 70 standard cable types.
- Resolution accuracy $\pm(1\%+2')$.
- Display length: 65 to 2000 feet.
- Distance to fault measured: 16 to 2000 feet.
- Saves up to 15 plots and parameters.
- CableCon™ software lets you connect to a PC (optional).

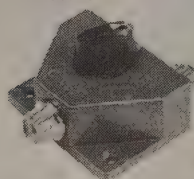
**Call for HRO's
Discount
Price.**



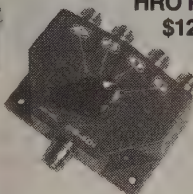
Coax Switches

DAIWA

Daiwa has two heavy-duty coaxial switches. Both are useable to 500 MHz and the unused positions are grounded. Switches are available at slightly higher prices with type "N" connectors.



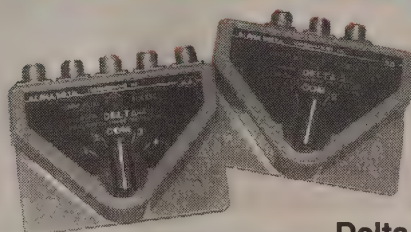
CS-201
Two-position switch.
HRO Price \$25.95



CS-401
Four-position switch.
HRO Price \$129.95

Lightning Protected Switches

ALPHA DELTA



Delta-4

4 Position Switch

This lightning protected 4 position RF coax switch uses the Alpha Delta Arc-Plug cartridge to protect your equipment from electrical surges. It features the exclusive center "off" (ground) position which internally disconnects and grounds all antenna circuits. The Delta-4 has custom designed cast housing with constant impedance micro-strip cavity construction for outstanding performance through UHF. The switch uses a positive detent roller bearing switch drive, and handles full legal power. Made in the USA. Order Delta-4/N for type "N" connectors. The Delta-4 handles frequencies through 500 MHz and the Delta-4/N through 1.3 GHz.

HRO Price \$74.95; Type N \$89.95

Delta-2 2 Position Switch

This 2 position coax switch is precision lightning surge protected. It has the same constant impedance cavity construction with "center-off" ground as the Delta-4 and a built-in replaceable Arc-plug® cartridge. Order UHF or type "N" connectors for low-loss performance through 1.3 GHz.

HRO Price \$49.95; Type N \$64.95.

Surge Protectors

ALPHA DELTA

Transi-Traps



Protect your rig from lightning, EMP and static. Transi-Traps are constructed of the finest quality materials: housings are of die cast aluminum; the brass element provides a constant impedance; the ceramic gas tube cartridge is protected by a unique custom-designed nylon shock absorber. The units give years of reliable service. When hit with a charge that exceeds its rating, it will short and indicate that a replacement plug is required. Most units take thousands of surges before needing a replacement.

Transi-Traps are designed for 50 ohms and include a replaceable cartridge. Units come with UHF connectors. Type "N" are available. To order replacement plugs, specify the model of Transi-Trap so the correct plug can be sent.

Model	Description	HRO Price
RT	200 W through 500 MHz	\$32.95
HV	2 kW through 500 MHz	\$35.95
LT	T type, 200 W through 30 MHz	\$22.95

AMERITRON

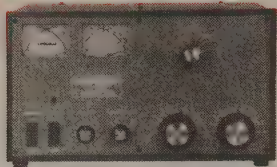
Step-Start In-Rush Current Protector



Stops in-rush current upon power up and absorbs momentary high voltage spikes to your amplifier. **ICP-120** for 110-120V or **ICP-240** for 220-240 VAC. **Suggested List \$79.95**

AMERITRON

Desktop Amplifiers

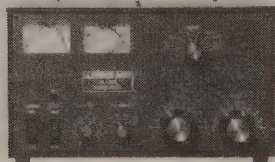


AL-800
\$1595

AL-800H
\$2295

Suggested List Prices - Call For Quotes

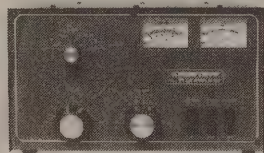
Ameritron's newest linear amplifiers have Eimac 3CX800A7 tubes. The AL-800 uses a single tube to provide 1200 watts PEP. The AL-800H uses two tubes to provide 1500 watts output. The amps cover 160-15 meters and are user modifiable for 12 and 10 meters. They offer the quality features of other Ameritron amplifiers.



AL-80B
\$1195.95

Suggested List - Call for HRO Discount Price

The AL-80B puts out a kW PEP from a compact desktop linear that plugs into a 120 VAC outlet. You get 850 watts output on CW and 500 watts output on RTTY. It covers all bands 160-15 meters including WARC and MARS. It is user modifiable for 10/12 meters with the proper license. The amp has an extra heavy duty power supply, Eimac® 3-500Z tube, nearly 70% efficiency, tuned input, Pi/Pi-L output, inrush current protection, multi-voltage transformer, dual cross-needle meters, QSK compatibility, two-year warranty. Made in the USA.



AL-811
3-tube model
600-watt output
\$649.95

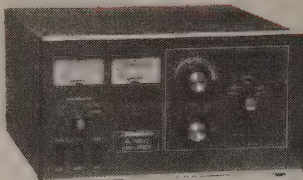
AL-811H
4 tube model
800-watt output
\$795.95

Suggested List Prices - Call For Quotes

These low-cost HF amps have plenty of power to burst thru QRM. Either compact desktop linear will slip right into your shack and plug into a 120 VAC outlet. You get three (or four) tough 811A transmitting tubes plus an extra heavy duty power supply, all HF band coverage, pressurized ventilation, tuned input, dual illuminated meters, adjustable ALC, operate/stand-by switch, transmit LED, UPS shippable.

Legal Limit Amps

These rugged linears use a super heavy duty hypersil® power supply!



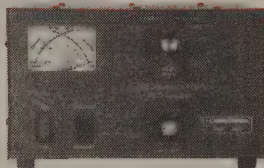
AL-1500

Ameritron's super power AL-1500 uses the herculean Eimac® 8877 ceramic tube. Only 65 watts drive gives you full legal output, and it is just loafing. The power supply is capable of 2500 watts PEP. **Suggested List \$2695.95**

AL-82 - 2 Eimac® 3-500Z tubes, 1500 watts. **Suggested List \$2095.95**

AL-1200 - Eimac® 3CX1200A7 tube, 1500 watts. **Suggested List \$2195.95**
Call for HRO DISCOUNT PRICES

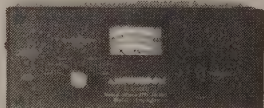
Solid State Amps



ALS-600
\$1299.95

Suggested List - Call for Quote

Ameritron has a no-tune solid-state FET amplifier for HF base station use. It features 600 W output, continuous 1.5-22 MHz coverage, instant band switching. Fully SWR protected. The included separate ALS-600PS power supply comes wired for 120 VAC.



ALS-500M
\$799.95

Suggested List - Call for Quote

For mobile, 13.8 VDC operation, this is the amplifier. It has 500 watts output.

AMPS / PRE-AMPS

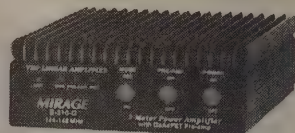
MIRAGE

VHF / UHF Amps

Turn your mobile, base or handheld into a powerhouse and talk further, longer, clearer with a Mirage amplifier. Choose from 47 models, for 6 meters through 70 cm for all uses: continuous duty repeater, amateur TV, and even commercial applications. Your handheld or base station will put out 40 to 600 watts. All modes: FM, SSB, CW. Overdrive, high SWR, over-temperature protection. Most include GaAs-FET preamp. All have a 1 year warranty on the RF power transistors. *Please see the chart on page 80 for detailed specs and model numbers.*

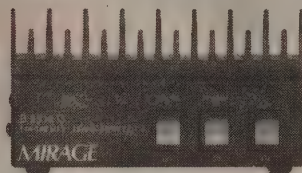
B-310-G

Compact 2-meter amp delivers 100 watts with just 4 watts input. Includes a 15 dB receive preamp. **Suggested List Price \$199.95**



B2516

Two-meter amplifier with a 10dB preamp. With 25 Watts in your output will be 160 Watts. **Suggested List Price \$318.95**



RC-1 Remote Control Head

These rugged amps are remote controllable. For use with all Mirage amps except B-23S, B-23G, C-22G and D-26N. **HRO Price \$42.00**



Compact Amps

Model BD-35 shown

Model	Description	List
BD-35	DualBand, 7W in-45W out	\$199.95
B-34	144MHz, 2W in-35W out, no preamp	\$79.95
B34G	144MHz, 2W in-35W out, w/preamp	\$99.95
B310G	144MHz, 4W in-100W out	\$199.95

GaAsFET Preamps

**High Gain
Ultra Low
Noise
GaAs-FET
Pre-amps**

Frequency (MHz)	In-Shack \$139	Mast Mount \$195
28-30	KP-2/10M	KP-1/10M
50-54	KP-1/6M	KP-2/6M
144-148	KP-1/2M	KP-2/2M
220-225	KP-1/220	KP-2/220
430-450	KP-1/440	KP-2/440

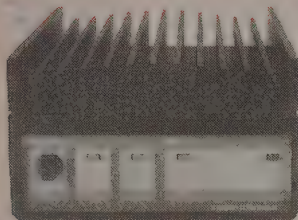
Pre-amps help bring in weak signals. Selectable gain prevents receiver intermod. 15 to 22 dB gain. Less than 0.8 dB noise figure. Automatic RF switching up to 160 watts. Choose *In-Shack* model or *Mast Mount* (includes remote control) model to reduce loss. Rugged die-cast enclosure.



AMPLIFIERS

VHF / UHF Amps

rfconcepts



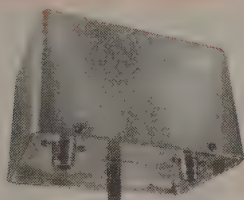
Here's that "extra punch" needed for distant contacts. Many RF Concepts amplifiers include GaAs-FET receiver pre-amps for weak signals. The amplifiers are all mode, solid-state and made in the USA. Each has a one year warranty on parts and labor and 6 months on the RF power transistors. More details on pages 49 and 65.

VHF / UHF Preamps

LANDWEHR GaAsFET Preamps

Landwehr's affordable, high quality, mast-mounted preamps come in three models: 2 meters, 220 MHz and 440 MHz. The GaAs-FET design provides gains up to 18 dB with a low noise figure. Features include type-N connectors and automatic T/R switching up to 150 watts. The preamp is **very popular** with satellite and "weak signal" enthusiasts. Call for quotes.

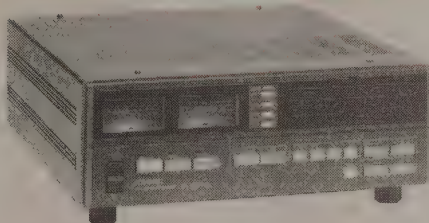
AMPIRE



Ampire's low noise pre-amplifiers for VHF and UHF automatically switch from receive to transmit when the transmitter is keyed. In receive mode they feature a helical filter with a narrow bandpass. In case of power loss, the relay will drop out of the transmit mode.

HF Amplifiers

YAESU



FL-7000

Yaesu's solid-state amplifier requires less than 100 watts to drive and produces 600 watts output power. It has a built-in automatic antenna tuner. The built-in power supply operates on 100-234 VAC, but an internal modification is required to change the voltage. The duty cycle on SSB is 30 minutes, or, for full carrier, 2 minutes. The amp obtains its band data directly from the Yaesu exciter and band changes are automatic. Band data can be selected from the front panel so the amp can be used with other manufacturer's exciters. The amp comes with an interface cable for the FT-757. Optional cables are required for the FT-767, FT-990, FT-1000 (E767), FT-890 (CT-11) or the FT-980 (E980).

Patch Cables

VAN GORDEN

Use Van Gorden Patch Cables to connect your amp to your rig. They are made from RG-8X coax with silver teflon PL-259 connectors. Use the longer cables for antenna runs.

Model	Length (feet)	HRO Price
8X-1.5ST	1.5	\$6.99
8X-3ST	3	\$8.99
8x-6ST	6	\$11.99
8X-12ST	12	\$14.95
8X-18ST	18	\$18.95
8X-50ST	50	\$29.95
8X-100ST	100	\$49.95

T / R Switch

AMERITRON

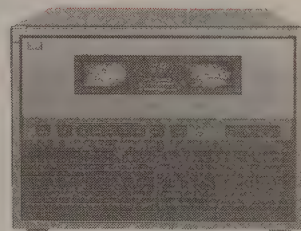
QSK-5 Pin Diode Transmit/Receive Switch. Self-contained. Connects externally to most HF amplifiers. Handles 2.5 kW PEP, 2 kW CW. Six times faster than vacuum relays. **Suggested List \$349.95**

JRC

JRL-2000F

\$4899.95

Suggested List
Call for Quote



The JRL-2000F has solved the problems of many conventional linear amplifiers: troublesome manual operation, fan noise, low margin of output and high IMD. The JRL-2000F is a heavy duty amp using 48 MOSFET for low distortion, high speed automatic antenna tuner, high efficient switching power supply, automatic antenna selector, and wireless remote control unit. Provides 1 kW output with a maximum input of 100 watts. Shipped by truck or FedEx only at extra cost.



ICOM

IC-2KL HF Amplifier

Icom's solid-state linear amplifier offers broadband tuning on 160-15 meters. No need to tune the amp when changing bands since automatic band switching information is provided directly from all Icom HF radios. A switch on the front of the amp selects bands with other manufacturer's exciters. The 2KL requires 50-80 watts of drive. Nominal output in all modes is 500 watts. It is supplied with an external power supply, the IC-2KLPS, which operates on 110 (factory wired) or, with internal modification, 220 VAC.

IC-4KL HF Amplifier

1000 watts out for one hour at full duty cycle, separate controller and amp, automatic high speed antenna tuner, full break-in operation, built-in 40 volt 60 amp power supply with automatic selection for 110 (factory wired) or 220 VAC. 220 VAC is recommended. Comes with handles for rack mounting.

AMPLIFIERS

HRO will provide 10 meter modification information to amplifier customers upon receipt of a copy of your valid, current amateur radio license.

Manufacturer	Model	Frequency Range	Modes	Power In	Power Out	Voltage	Current	Pre-amp	Connector	Wgt	List Price Call for HRO Discount Price
Ameritron	AL-1500	160-15 M*	SSB, CW	65 W	1500+ W	220 VAC	15 A	-	SO-239	50 lbs#	\$2,695.95
	AL-1200	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	15 A	-	SO-239	50 lbs#	\$2,195.95
	ALS-500M	160-15 M*	SSB, CW	100 W	500 W	13.8 VDC	80 A	-	SO-239	7 lbs	\$799.95
	ALS-600	160-15 M*	SSB, CW	100 W	600 W	110/220 VAC	12 A 110V	-	SO-239	13 lbs#	\$1,299.95
	AL-80B	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	15/10 A	-	SO-239	54 lbs	\$1,195.95
	AL-800	160-15 M*	SSB, CW	100 W	750 W	110 VAC	12 A	-	SO-239	67 lbs	\$1,595.95
	AL-800H	160-15 M*	SSB, CW	55 W	1500 W	240 VAC	9 A	-	SO-239	69 lbs	\$2,295.95
	AL-811	160-15 M*	SSB, CW	75 W	600 W	110/220 VAC	8/4 A	-	SO-239	40 lbs	\$699.95
	AL-811H	160-15 M*	SSB, CW	75 W	800W	110/220 VAC	8/4 A	-	SO-239	41 lbs	\$849.95
Icom	AL-82	160-15 M*	SSB, CW	100 W	1500 W	220 VAC	15 A	-	SO-239	52 lbs#	\$2,095.95
	IC-2KL	160-15 M*	SSB, CW	100 W	500 W	110/220 VAC	20 A 110V	-	SO-239	45 lbs	\$2,981.95
	IC-4KL	160-15 M*	SSB, CW	100 W	1000 W	110/220 VAC	18 A 220V	-	SO-239	80 lbs	\$9,900.95
JRC	JRL-2000F	160-12 M*	SSB, CW	100 W	1000 W	110/220 VAC	2.5 kVA	-	SO-239	62 lbs	\$4,899.95
Mirage	A-1015G	50-54 MHz	All	10 W	150 W	13.8 VDC	23 A	yes	SO-239	5 lbs	\$389.95
	A-1035G	50-54 MHz	All	10 W	350 W	28 VDC	23 A	yes	SO-239	5 lbs	\$653.95
	B-34	144-148 MHz	FM	2 W	35 W	12-15 VDC	4 A	-	SO-239	2 lbs	\$79.95
	B-34G	144-148 MHz	FM	2 W	35 W	12-15 VDC	4 A	yes	SO-239	2 lbs	\$99.95
	BD-35	143-149/430-450 MHz	FM	7 W	45 W	12-15 VDC	7 A	-	SO-239	3 lbs	\$199.95
	B-215G	144-148 MHz	All	2 W	150 W	13.8 VDC	20 A	25 dB	SO-239	5 lbs	\$377.95
	B-310G	144-148 MHz	All	4 W	100 W	13.8 VDC	15 A	yes	SO-239		\$199.95
	B-108G	144-148 MHz	All	10 W	80 W	13.8 VDC	12 A	10 dB	SO-239	3 lbs	\$227.95
	B-1016G	144-148 MHz	All	10 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lbs	\$377.95
	B-1030G	144-148 MHz	All	10 W	300 W	13.8 VDC	48 A	yes	SO-239		\$687.95
	B-1060G	144-148 MHz	All	10 W	600 W	28 VDC	52 A	yes	SO-239		\$1,094.95
	B-2516G	144-148 MHz	All	25 W	160 W	13.8 VDC	25 A	10 dB	SO-239	5 lbs	\$318.95
	B-2530G	144-148 MHz	All	25 W	300 W	13.8 VDC	48 A	yes	SO-239	15 lbs	\$687.95
	B-2560G	144-148 MHz	All	30 W	300 W	28 VDC	52 A	yes	SO-239	15 lbs	\$1,094.95
	B-5016G	144-148 MHz	All	50 W	160 W	13.8 VDC	24 A	yes	SO-239		\$318.95
	B-5030G	144-148 MHz	All	50 W	300 W	13.8 VDC	48 A	yes	SO-239		\$669.95
	B-5060G	144-148 MHz	All	50 W	600 W	28 VDC	45 A	yes	SO-239	15 lbs	\$1,094.95
	C-22	222-225 MHz	All	2 W	20 W	13.8 VDC	5 A	-	SO-239		\$167.95
	C-22G	222-225 MHz	All	2 W	20 W	13.8 VDC	5 A	yes	SO-239	2 lbs	\$167.95
	C-211G	222-225 MHz	All	2 W	110 W	13.8 VDC	20 A	yes	SO-239	5 lbs	\$337.95
	C-106G	222-225 MHz	All	10 W	60 W	13.8 VDC	12 A	yes	SO-239	4 lbs	\$238.95
	C-1012G	222-225 MHz	All	10 W	120 W	13.8 VDC	5 A	yes	SO-239	5 lbs	\$337.95
	C-1022G	222-225 MHz	All	10 W	60 W	13.8 VDC	20 A	yes	SO-239	4 lbs	\$229.95
	C-2512G	222-225 MHz	All	25 W	120 W	13.8 VDC	20 A	yes	SO-239	5 lbs	\$334.95
	C-2522G	222-225 MHz	All	30 W	200 W	13.8 VDC	42 A	yes	SO-239		\$699.95
	C-5012G	222-225 MHz	All	50 W	120 W	13.8 VDC	20 A	yes	SO-239		CALL
	C-5022G	222-225 MHz	All	50 W	240 W	13.8 VDC	42 A	yes	SO-239		CALL
	D-15N	425 - 450 MHz	All	2 W	15 W	13.8 VDC	3 A	-	N type		\$187.95
	D-26N	430-450 MHz	All	2 W	60 W	13.8 VDC	12 A	-	N type	2 lbs	\$267.95
	D-1010N	430-450 MHz	All	10 W	100 W	13.8 VDC	20 A	-	N type	5 lbs	\$391.95
	D-3010N	430-450 MHz	All	30 W	100 W	13.8 VDC	20 A	-	N type		\$361.95
	D-100-ATVN	429 MHz ATV	All	1 W	52 W	13.8 VDC	20 A	-	N type		\$414.95
	D-1010-ATVN	430 MHz ATV	All	10 W	100 W	13.8 VDC	20 A	-	N type		\$414.95
RF Concepts	2-23	143-149 MHz	All	2.5 W	(2 in) 30 W	13.8 VDC	5 A	15 dB	SO-239	2 lbs	\$149.95
	2-70	143-149/430-450 MHz	FM	.5-7 W	(5in)30 / 20 W	13.8 VDC	5 A	-	BNC	3 lbs	\$259.95
	2/70G	143-149/430-450 MHz	FM	.5-7 W	(5in)30 / 20 W	13.8 VDC	6 A	15/10 dB	BNC	3 lbs	\$289.95
	2-315	143-149 MHz	All	5-50 W	(30 in) 150 W	13.8 VDC	22 A	18 dB	SO-239	5 lbs	\$319.95
	2-417	143-149 MHz	All	2.5-50 W	(45 in) 170 W	13.8 VDC	22 A	18 dB	SO-239	5 lbs	\$319.95
	3-22	220-225 MHz	All	2.5 W	(2 in) 20 W	13.8 VDC	4 A	15 dB	SO-239	2 lbs	\$159.95
	3-112	220-225 MHz	All	2.15 W	(10 in) 120 W	13.8 VDC	22A	18 dB	SO-239	5 lbs	\$369.95
	3-211	220-225 MHz	All	2.5 W	(2 in) 110 W	13.8 VDC	22A	18 dB	SO-239	5 lbs	\$369.95
	3-312	220-225 MHz	All	2.30 W	(30 in) 120 W	13.8 VDC	20 A	18 dB	SO-239	5 lbs	\$339.95
	4-310	420-450 MHz	All	2.40 W	(30in)100 W	13.8 VDC	20 A	12 dB	N type	5 lbs	\$369.95
	4-110	420-450 MHz	All	2.15 W	(10 in) 100 W	13.8 VDC	22 A	12 dB	N type	5 lbs	\$399.95
	4-32	420-450 MHz	All	2.5 W	(3 in) 20 W	13.8 VDC	4 A	12 dB	SO-239	2 lbs	\$199.95
	MAXAMP-10	144-148 MHz	All	10 W	150+ W	13.8 VDC					\$349.95
	MAXAMP-45	144-148 MHz	All	45 W	150+ W	13.8 VDC					\$319.95
	VHF-1-60	144-148 MHz	FM	1-8 W	(1 in) 60 W	13.8 VDC	14 A	-	SO-239	7 lbs	\$259.95
SGC	SG-500	Export or Domestic	SSB, CW		500 W	13.8 VDC	**	-			\$1,195.95
Yaesu	FL-7000	160-15 M*	SSB, CW	100 W	600 W	110/220 VAC	20/10 A	-	SO-239	60 lbs	\$2,459.95

* Owner modifiable for 10 meters # Add 35 pounds for transformer shipped in separate package. ** SGC PS-50 recommended to meet specs

ANTENNA TUNERS

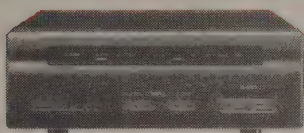


3 KW Tuner MB-V-A



This high quality antenna tuner is designed for the amateur who wants "the best." Match transmitter output impedance to almost any antenna system for maximum power transfer. Low pass Pi network tuning 1.8-30 MHz. Automatic SWR. Separate power meter, 300 or 3000 W. Push button antenna switch for 4 antennas. Includes 3 KW balun. **Suggested List Price \$791.95**

KENWOOD



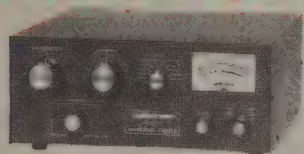
AT-50

A fully automatic antenna tuner to use with the TS-50 and other 100 watt HF transceivers. Useful for both mobile or fixed operation. Accurate tuning by pressing the AT TUNE key on the TS-50. Can be installed remotely. **Suggested List \$369.95**

AT-450

Automatic tuner specially designed to operate inside the TS-450S and the TS-690S. It can easily be installed in the field by the ham. **Suggested List \$249.95**

AMERITRON



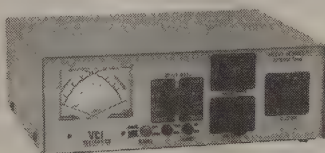
Use the **ATR-15** with legal limit amps. Heavy duty silver plated bandswitch virtually eliminates switch failure. High power transmitting capacitors. 1.8-30 MHz. Peak reading SWR/watt-meter. 6 position antenna switch. Selectable 1:1 or 4:1 balun. Meter lamps require 12 VDC. **Suggested List \$399.95**

VECTRONICS

HFT-1500

Roller Inductor Tuner

Optimizes the performance of the antenna system of your transmitter or SWL receiver. The tuner measures the power and SWR, so you can tune the indicated SWR to the lowest ratio possible. A unique Digital Bar Graph display enables you to analyze peak SSB power measurements. Level and Delay controls are front panel adjustable. The HFT-1500 is rated for 1000W single tone continuous, 2kW PEP SSB. Frequency coverage is 1.8 to 30 MHz. **Suggested List Price \$459.95**



VC-300-DLP

This easy-to-operate tuner has a built-in dummy load and a peak or average-reading meter. It is compatible with almost ANY antenna including verticals, dipoles, inverted vees, beams, mobile whips that are fed by coax cable, open feeders, balanced lines or a single wire. Covers 3.5 to 30 MHz continuous for 300 watts. Up to 150 watts for 1.8 MHz. Features a dual movement lighted meter to simultaneously monitor power and SWR. **Suggested List Price \$149.95**

VC-300-D

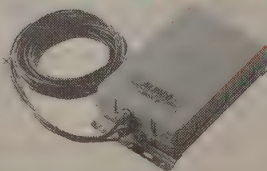
Vectronics' top-of-the-line antenna tuner has identical specifications to the VC-300-DLP but also includes a digital bar graph displaying peak output power. LEVEL and DELAY controls have been added to calibrate the display and to vary the display response. **Suggested List Price \$169.95**

VC-300M

This compact antenna tuner is lightweight, easy to use, and economical. It has a dual movement meter to simultaneously monitor SWR and power. The tuner covers 1.8 - 30 MHz with power up to 300 watts. **Suggested List Price \$119.95**



EDX-2



This automatic tuner is designed for use with the Alinco DX-70 HF radio but may be adapted for use with most HF rigs. Tunes from 10 to 160 m with wire lengths of 8 to 80 feet (40' for 160m). **HRO Price \$329.95**



Icom has six antenna tuners to use with their radios. All are automatic and, with the front panel controls, can be used with most HF exciters. Random wire and balanced line antennas cannot be used with the resonant antenna tuners. See the table on Page 11 for more tuner / radio compatibilities.

Resonant

AT-500

A tuner for base station use with a cabinet to match the IC-751A. The AT-500 can be used with the 2KL HF linear. **HRO Price: \$999.95**

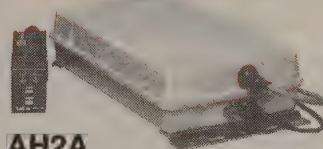
AT-150 / AT-160

Fully automatic 100 W tuners styled after the IC-735 and IC-728 respectively. **HRO Prices: AT-150 \$529.95; AT-160 \$499.95**

AT-180

Fully automatic 100 W tuner styled for the IC-706. HF/6 meters. **HRO Price: \$519.95**

Random Wire



AH2A

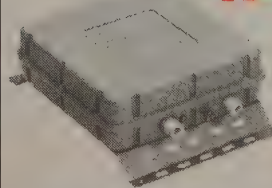
This tuner includes a control unit for direct connection to the IC-735. Use with other Icom HF radios with the proper matching cable. Tunes back-stays on a sailboat. Has optional bumper mount and whip (AH2B). **HRO Prices: AH2A \$669.95; AH2B \$269.95**

AH3

This automatic tuner, designed to use with the IC-738, 737A, 728, 725 and IC-707, features automatic digital control tuning and eight frequency memories. Use with the optional AH-2b antenna element for mobile operation. **HRO Price \$549.95**



FC-800



This automatic antenna tuner operates with the FT-890 HF transceiver. The tuner is fully automatic and operations can be controlled from the front of the FT-890. **Suggested List \$499.95**

HF ANTENNAS

KLM



KT34XA

KT-34A / KT-34XA

The KT-34A and KT-34XA are pacesetters for triband performance. The four element KT-34A offers an unusually compact solution for a three-band high performance installation. The six element KT-34XA outperforms all other commercially available tribanders. The performance of these antennas comes from the application of lossless linear loading and high-Q air capacitors.

Monobanders

"World Class Extra" antennas are designed to satisfy the serious DX operator. The 80M-3, 40M-4 and the 20m, 15m and 10m 6-element monobanders offer the ultimate in performance with no compromises. They are designed to achieve maximum gain, bandwidth and front-to-back ratios. All World Class Extra antennas use nonresonant Phillystran cable for element and boom-support.

160m Vertical

160V is center load for 160m. Use with ground or radials. A compact solution to your 160m needs.

HF Log Periodic Antennas

KLM's log periodics offer extended coverage of the amateur bands. The 10-30-7 LPA covers 20, 15, and 10m plus the WARC bands. The addition of a 40M-1 dipole provides 40m as well and the antenna is the 7.2 / 10-30-7 LPA. For continuous coverage from 6-30 MHz use the 6-30-15 LPA. The 12-8 LPA covers 6-12 MHz.

BUTTERNUT

Multi-band HF Verticals

HF9V-X

More efficient than conventional trapped designs or "halfwave" verticals, the exclusive Butternut Differential Reactance Tuning system allows more of the antenna to be active on each band, for greater bandwidth, lower radiation angle, and superior performance!

- 9 bands, 80 thru 6 meters.
- No-radial operation with CPK counterpoise.
- Highly efficient 26 foot vertical radiator.

HF2V

Are you ready for the sunspot shortage when the action will be on 80 and 40? Be prepared with the HF2V. The entire antenna radiates on both bands for low radiation angle and maximum performance.

- Dual-band optimized for 80 and 40 meters.
- 32 feet tall; no guying required.
- 160 or 30 Meters with optional adapters.

HF6V-X

Work the 6 most popular bands—80, 40, 30, 20, 15 & 10 meters—with a single, highly efficient vertical radiator only 26 feet tall!

- No radial operation with CPK counterpoise.
- Add 160, 17 & 12, or 6 m with optional adapters.

Accessories for Vertical Antennas

CPK Counterpoise kit for HF9V-X, HF6V-X. Allows operation with no radial system.

TBR-160S 160 Meter kit for HF9V-X, HF2V or HF6V-X. Not recommended for CPK.

STR-II Resonant radial kit for above ground mounting of Butternut verticals.

RMK-II-Roof mounting kit. Includes STR-II.

A-17-12 Adapter for 17 and 12 meters for 6 band Butternut verticals.



HF5B "Butterfly" Beam

Five popular bands in a single lightweight 2 element beam antenna. Ideal where space is limited, the HF5B provides up to 3 dBd on 20, up to 5 dBd on 15, 12, and 10. Light enough to turn with a TV rotator, the HF5B has a 6 foot boom and a wingspan of only 12.5 feet. Weighs only 20 pounds; surface area is 3 square feet.

Force 12

Classic Tribanders

C Series

Force 12 has the finest lineup of antennas to cover the classic 20-15-10 bands with a single feedline. The antennas feature gain of 17 and 12 meters with a VSWR of about 2.8:1, easily matched with any tuner. All are trapless and are acclaimed as outperforming all the various trapped antennas.

The C-3 is the first model in Force 12's classic 3-band series. After 2 1/2 years of development, the 18' boom design with 7 elements provides the finest performance ever offered in a tribander. It has an efficiency greater than 98%, and our customers tell us that the C-3 outperforms every trapped antenna, regardless of boom length. Now the unbeatable C-3 performance has been extended to a smaller footprint.

The C-3S incorporates a redesigned 10-meter section allowing the boom to be only 12'. The trade-off is the C-3S covers about 1.1 MHz (i.e. 28.200-29.300) with a 2:1 VSWR, where the C-3 covers the entire 10 meter band. The gain of the C-3S is within .1 to .2 dB of the C-3.

The C-3S can also cover 40 meters with 130 kHz 2:1 VSWR. This is the C-4S. The C-4C conversion can make the C-3S into a C-4S in the field. Also available is the C-3XL, a composite of larger monobanders.

- C-3** 20-10 m, 18' boom.
- C-3S** 20-10 m, 12' boom.
- C-4** 40-10 m, 18' boom.
- C-4S** 40-10 m, 12' boom.
- C-3SL** 20-15-10 m (3-element 20, 3-element 15, 4-element 10, all with separate feedlines for maximum versatility).
- C-4XL** 40-10 m, 30' boom (includes 2 elements on 40).
- C-4SXL** 40-10 m, 23' boom (includes 2 elements on 40).

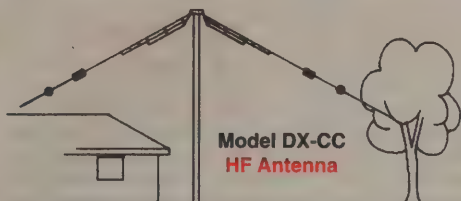
Call HRO for discounts on **KLM**, **BUTTERNUT**, and the full line of **Force 12** antennas.

INSULATORS / BALUNS

ALPHA DELTA

Alpha Delta makes an assortment of limited space antennas. All use stainless steel hardware where required, are fully assembled and manufactured to withstand severe weather. SO-239 connectors.

Model DX-A: A quarter wave twin sloper for 160-80-40 meters. One leg is 67' and the other 55'. Installs as an inverted-V. **HRO Price \$59.95**



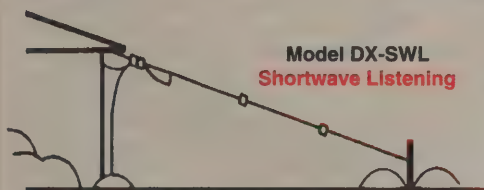
Model DX-CC: A no trap 80-40-20-15-10 meter dipole. 82' long. **HRO Price \$99.95**

Model DX-DD: A no trap 80-40 meter dipole. 82' long. **HRO Price \$79.95**

Model DX-EE: A no trap 80-40-20-15-10 meter dipole. Only 40' long. **HRO Price \$89.95**

DX-B

The **DX-B** is a single wire, high performance quarter wave sloper antenna for 160, 80, 40 and 30 meters. For limited space, the antenna requires only 60 feet for installation, should be used with a wide range antenna tuner. Pre-assembled and pre-tuned. Has stainless steel hardware, 12 gauge insulated solid copper wire and the Alpha Delta "ISO-RES" RF choke coils, 50 ohm coax feed. Full legal power. **HRO Price \$69.95**



The **DX-SWL** model is tuned for the most popular SWL bands (13, 16, 18, 19, 21, 25, 31, 41, 49, 90 and 120 meters). It can be used as a multi-band transmit antenna with the appropriate antenna tuner. Length is 60 feet. Requires a single support. Standard coax connects antenna to your radio. Feed point is 50 ohms. SO-239 connection. **HRO Price \$69.95**

The **DX-ULTRA** has extremely low noise performance. Tapered wing design allows broadband operation. Designed with ISO-RES inductors and parallel wire elements. Covers MW, tropical, SW, government, military, embassy, maritime, aircraft and commercial frequencies. 80 feet long. Configure as a dipole, inverted-vee, or sloper. **HRO Price \$109.95**

VAN GORDEN

Dipole Kits

Wire dipole antenna kits complete with a Hi-Q balun, copper antenna wire, ceramic antenna insulators, and 100-foot nylon support rope.

Standard Length

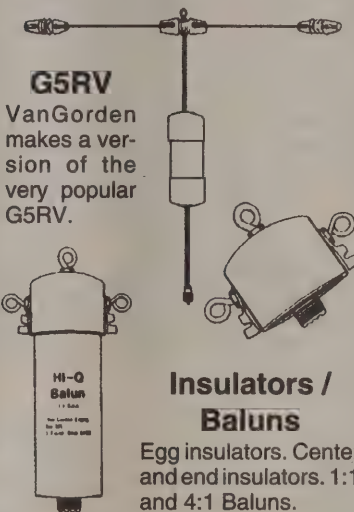
Models D-10 for 10 meters, D-15 for 15 m, D-20 for 20 m, D-40 for 40 m, and D-80 for 75 / 80 m.

Shortened

Models SD-40 for 40 m and SD-80 for 75 / 80 m.

Parallel

These models are made of multiple dipoles connected at the center balun and fed at this one point. Model PD-8010 is for 10-80 meters, PD-8040 is for 40 and 80 m, PD-4010 is for 10-40 m, and PD-4020 is for 20-40 m.



G5RV

VanGorden makes a version of the very popular G5RV.

Insulators / Baluns

Egg insulators. Center and end insulators. 1:1 and 4:1 Baluns.

Van Gorden Antennas

Model	Type	Band	Length ft (m)	Power PEP	Wire Size	HRO Price
D-10	Standard Dipole	10	16(4.9)	2KW	#14	\$25.95
D-15	Standard Dipole	15	22(6.7)	2KW	#14	\$26.95
D-20	Standard Dipole	20	33 (9.9)	2KW	#14	\$27.95
D-40	Standard Dipole	15/40	66 (19.8)	2KW	#14	\$28.95
D-80	Standard Dipole	75/80	130 (39)	2KW	#14	\$31.95
ALL-BANDER	Standard Dipole	160-10 *	134 (40.8)	2KW	#14	\$29.95
SHORTY	Dipole	160-10 *	70(21)	2KW	#14	\$39.95
SD-40	Shortened Dipole	40	45 (13.5)	2KW	#14	\$33.95
SD-80	Shortened Dipole	75/80	90 (27)	2KW	#14	\$35.95
PD-8010	Parallel Dipole	10 to 80	130 (39)	2KW	#14	\$43.95
PD-8040	Parallel Dipole	15/40/80	130 (39)	2KW	#14	\$39.95
PD-4010	Parallel Dipole	10, 20, 15/40	66 (19.8)	2KW	#14	\$37.95
PD-4020	Parallel Dipole	20, 15/40	66 (19.8)	2KW	#14	\$33.95
G5RV	Dipole	3.5-30 MHz	102(31)	2KW	#14	\$49.95

* Antenna tuner required

Insulators

hy-gain
by Telex

Center Insulator: Model 157S

For dipoles. Accepts 1/4" or 3/8" coax. **HRO Price \$26.95**

End Insulator: Model 156

For multiband dipoles. Pair of 7" heavily serrated end insulators. **HRO Price \$26.95**

Baluns

BENCHER

ZA-1A Balun

The ideal 1:1 Balun for dipoles, quads, inverted vees, and

yagis from 80 - 10 meters lets your antenna radiate, not your feed line. It will accept 1/4" support rope for inverted vees. No rusting materials used. No ferrite cores to saturate and cause TVI. DC grounded for lightning protection. Included "O" ring seals coax connector. Rated 5KW peak. This tough, well-made product, will provide years of reliable service. **HRO Price \$37.95**

hy-gain
by Telex

BN-4000: Series 243S

These current-type baluns come in three models. BN-4000B for beams; BN-4000D for dipoles; BN-4000N with a type-N connector. Frequency 1 to 54 MHz for beams. **Call for HRO Discounts.**

BN-86: 242S

Broadband 50 ohm ferrite, voltage-type balun. Use-able from 3-30 MHz. Comes with clamp to bolt to boom and SO-239 connector. **HRO Price \$36.95**

HF Multi-Band Verticals



R7000

Upgradable 7 Band Vertical

After months of development and testing, Cushcraft is pleased to announce the successor to the popular R-7 vertical. The R7000 has all the features of the R-7 plus the ability to add 80 meters with the optional R-80 kit.

It has controlled inductance traps making installation and all weather performance easy. The AL6063 cover design completes the LC circuit providing stable capacitance and high power handling.



**Now
80 Meters
with R80
Kit**

It's the one you've asked for. Amateur radio's **Most Popular** vertical design now gives you 30 and 40 meters with **No Ground Radials!**

Only 24 feet tall, the R7000's small footprint and ground independence give you "mount-anywhere" flexibility. Assembly is a snap.

Automatic frequency selection and 7 short counterpoise rods let you concentrate on DXing, contesting, or rag-chewing from your apartment, condo, or motorhome. Convenience is only one reason to own an R7000. The main reason is performance—pile-up-breaking power made possible by the R7000's low angle of radiation.

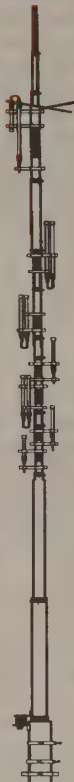
Experience amateur radio's highest performance-to-size ratio—now on all amateur HF bands (optional R-80 kit required for 80 meters).

AP8A Eight-Band Powerwave

This 8-band quarter-wave is designed for maximum performance on 10, 12, 15, 17, 20, 30, 40, and 80 meters. It uses high quality components yet is priced for every ham's budget. Assembly is a snap using just a few basic tools.

The heart of the AP8A is the Powerwave Trap which incorporates a time-proven Cushcraft capacitor design. This results in compact traps with better frequency selectivity and 10% greater radiation efficiency. Capacitor sections are sealed and bonded with adhesive-lined heat shrink tubing.

The AP8A has thick wall seamless aluminum tubing and high tensile fiberglass for exceptional strength. All the hardware is stainless steel. It stands 26 feet tall. Ground radials are needed for optimum performance.



- AP8A** 10, 12, 15, 17, 20, 30, 40, 80M
APR18A Radial Kit (for use with AP8A or any other HF vertical)

Most Economical Vertical HF Antennas

Economical high-performance antennas for today's active multi-band station. Automatic switching, broad-band enclosed traps. These verticals may be roof or ground mounted.

- AV3** 10, 15, 20 meters
AV5 10, 15, 20, 40, 80 meters

World Ranger Series

A3S Tri-Band Beam



Multi-Band Beams

The four-element A4S with stainless steel hardware outperforms other beams in day-to-day operation and the tough competition of contests. It has achieved the success of DXCC in only two days. The combination of precisely tuned traps with excellent spacing to element length ratios make the A4S a proven winner. Designed for easy assembly, the A4S is light weight, built to last and has a clean profile to reduce wind load. The A3S, with all stainless steel hardware, is the most popular three element, three-band beam available today. It has plenty of gain and good front-to-back ratio. Great performance is yours with a clean profile beam that can be mounted on a lightweight tower and rotator in a very small space. Rugged design features insure many years of trouble-free operation.

- A3S** 10, 15, 20 m, 3-element, 8.0 dBd gain
A3SDX Smaller package A3S for easy travel
A4S 10, 15, 20 m, 4-element, 8.9 dBd gain

World Ranger Four-Band Upgrade Kits

Convert Cushcraft A3S and A4S beams to four bands with this simple add-on kit. You'll be able to work the 40 meter DX when sun spots are low. With an easy adjustment, the new 10 MHz WARC band is available.

- A743** 30 or 40 meter kit for A3S
A744 30 or 40 meter kit for A4S

Rotatable Dipoles

These dipoles give bi-directional performance and rotatable convenience. You can mount them high and away from the trees for much better performance than a wire dipole. Our single and multi-band dipoles feature high-performance traps, heavy wall tubing, and rugged hardware for years of reliable operation.

- D40** 40 meters
D4 10, 15, 20, 40 meters
D3 10, 15, 20 meters
D3W 12, 17, 30 meters



WARC Band Beam A3WS

The A3WS 3-element beam gives full performance on 12 and 17 meters. With the addition of our easy-to-use A103 add-on kit, it will also cover 30 meters. It needs only a lightweight tower and rotator or you can mount it above your existing tribander. A3WS features include pinned boom sections, heavy duty element clamps with backing plates plus all stainless steel hardware.

- A3WS** 18, 24 MHz, 8 dBd gain
A103 10 MHz (30 meter) kit for A3WS

If don't see it here, ask HRO.
Cushcraft manufactures an extensive line of antennas.

Log Periodic



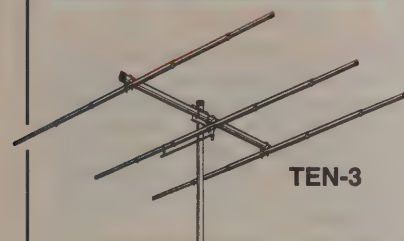
ASL-2010

Skylog

This log periodic is the most cost effective, high gain, five band antenna solution on the market today. Gain (6.4 dBd) and beamwidth (65 deg.) are constant for uniform coverage from 10 to 20 meters. The Skylog is rated for continuous duty at full legal power. The boom is 18 feet and the turning radius 19.5 feet. Stainless steel hardware and incredibly rugged element design make this antenna a "survivor."

ASL-2010 13.5 to 32 MHz

10 Meters



TEN-3

10-Meter Monobander

Our 3-element beam is perfect for the novice or any other ham who wants high gain with a good front-to-back ratio on 10 meters. This antenna with its 8 foot boom is easy to install on a simple mount with only a lightweight rotator. The matching system is our proven Reddi-Match for 50 Ohm, no balun feed and SO-239 connector. Make more contacts with the TEN-3.

TEN-3 3 element 8.0 dBd gain

10 Meter Mobile

CS28M is a magnet mount mobile for 10 meters. It is an ideal companion to those new 10 meter multimode rigs. Cushcraft / Signals mobiles are recognized by professional users around the world for their rugged good looks and dependability. The antenna comes complete with 49" stainless steel whip and spring, 90 pound pull chrome-plated magnet with Protective Mylar® pad, twelve feet of high quality RG-58AU coax, and PL-259 connector. You'll be on the air in a matter of minutes, operating mobile to Munich and many more DX locations.

VHF / UHF Boomers

Cushcraft boomers are so efficient, powerful and successful that they defy comparison. They have established new VHF / UHF distance records and their computer based design has become the standard for others to emulate. All boomers have stainless steel hardware.

The 31' 17B2 has a forward gain of 18.0 dBd, an incredibly clean pattern, and excellent front to back ratio. The UltraMatch feed system with N-connector provides optimum efficiency.



13B2
2m Boomer

The 13B2 will be your choice for performance across the 2 meter band. Its 15' boom makes it a popular antenna that fits just about anywhere for sideband, packet or FM operations.

For serious 6 meter operators, the 34' 617-6B has 6 elements and 15.8 dBd gain.

For the 220 MHz band, choose the 224WB 4 element or 225WB 15 element for FM simplex and repeater operation. The 220B is for the serious DX'er.

124WB	144-148 MHz	4 elements - SO-239
13B2	144-148 MHz	13 elements - SO-239
17B2	144-145 MHz	17 elements - N conn.
26B2	144-148 MHz	26 elements - SO-239
220B	220-223 MHz	17 elements - SO-239
224WB	220-225 MHz	4 elements - SO-239
225WB	220-225 MHz	15 elements - SO-239
424B	429-435 MHz	24 elements - N conn.
617-6B	50-51 MHz	6 elements - SO-239



719B
70 cm Boomers
19 & 29 Element

Both boomers for the 70 cm band are designed for easy assembly with stainless steel hardware. The feed systems employ a UM4N balun enclosed in a UV stabilized housing. The 13.5-foot-long 719B offers enhanced performance in the 70 cm band with a gain of 15.5 dBd. Mount it vertical for FM or horizontal for CW and sideband. The 729B is the new leader in 70 cm performance with a forward gain of 17.8 dBd. Its modified T-match allows for increased bandwidth over conventional T-matches.

**Call Toll-Free for
Cushcraft Discounts**

Dual-Band Yagis



A270-6S

2m / 70cm
Dual Band

Increase your range by selecting one of the new Cushcraft dual band Yagis. Direct more of your output power when transmitting while reducing interference and increasing signal strength when receiving. Select the antenna for your station depending on the distance of your contacts.

A270-6S	144-148 / 430-450 MHz
	6 element 2.8' boom; 7.8 dB
A270-10S	144-148 / 430-450 MHz
	10 element 6.2' boom; 10 dB

VHF / UHF Yagis



A148-10S

70 cm & 2 Meter
Yagis

These lightweight and durable antennas feature good bandwidth, tapered length elements, 50-Ohm no-balun feed with SO-239 connector and protective boot. You'll hear many still on the air after more than 25 years.

A144-7S	7 element	144-146 MHz	8' boom
A148-10S	10 element	144-148 MHz	12' boom
A430-11S	11 element	430-435 MHz	5' boom

6 Meter Yagis

Enjoy the new popularity of the 6 meter band with an S-series yagi. Computer aided modeling and stainless steel hardware were used by Cushcraft to optimize the performance of our popular 6 meter yagis.

A50-3S	3 element	50-54 MHz	6' boom
A50-5S	5 element	50-54 MHz	12' boom
A50-6S	6 element	50-54 MHz	20' boom



A449-6S

FM Yagis
3-4-6-11-20 Element

FM Yagis are specifically cut for FM amateur frequencies and vertical polarization. The four and six element models have end brackets for tower or mast side mounting. They feature Reddi-Match driven elements with direct 50 Ohm feed, compact size, good gain and front-to-back ratio. Count on quick and easy assembly. **Great antennas for packet operation.**

124WB	4 element	144-148 MHz	4' boom
A148-3S	3 element	146-148 MHz	3' boom
A148-10S	10 element	144-148 MHz	12' boom
A148-20S	20 element	144-148 MHz	12' boom
A449-6S	6 element	440-450 MHz	3' boom
A449-11S	11 element	440-450 MHz	4' boom
Vertically and Horizontally Polarized			
A148-20T	20 element	144-148 MHz	11' boom

Mag Mount Mobiles

NEW!

Project Gold Dual Band Mobile 2m and 70cm

These slim-line, aerodynamic design antennas provide 5.5 dB on 440 and 3.7 dB on 2 meters. The Gold series features a solid brass base which is nickel plated, then black powder coated. The antennas have a stainless steel spring, nickel plated base contact, gold plated center contact, and a weather resistant rubber O-ring around the base. Both the base matching network and center phasing coil resist shock, temperature, and vibration inside Delrin® Easy Touch™ protection. The antennas feature lift and tilt-over, a heavy duty stainless steel whip, and a 5 year warranty. Many components meet MILSPEC requirements. Available with mag-mount or mount to existing 3/4" roof mount.

- CG270AS** Dual Band Mobile Antenna
144-148 / 440-450 MHz
CG270AE Dual Band Mobile Antenna
144-146 / 430-440 MHz
CG144A 2m Mobile antenna, 144-148 MHz
CG144AE 2m Mobile antenna, 144-146 MHz

Mag Mounts for Above

- CSMG** 90lb, PL-259, UltraLink®
less loss Teflon® coax
CSMGN 90lb, N-Conn, UltraLink®
less loss Teflon® coax

Gold Series antenna shown
with the optional CS-MG

VHF / UHF Mobile Antennas

Cushcraft high performance, better-value mobile antennas have sleek black ABS housings with stainless steel springs and tapered stainless whips. All include coax and magnetic mount with 90 pound pull magnet.

- CS50M** 50-54 MHz
CS147M 144-174 MHz
CS1147M 144-148 MHz
CS220M 220-225 MHz
CS450M 435-470 MHz
CS1450M 435-450 MHz

Dual Band Mobile CS-270M

The perfect companion for your dual band transceiver is the **CS-270M**. It offers 3.7 dB gain on 2 meters and 6.0 dB on 70cm in one compact 36.5 inch antenna.

The base has a unique matching network designed on a rugged P.C. board frame. A small phasing coil is insert molded into the antenna rod making it impervious to moisture. The magnetic mount features 90 pound pull, protective mylar pad, low loss feedline and PL-259 connector.

Ringo Rangers

ARX-6

6 M Ringo Ranger

The ARX-6 combines compact size with great bandwidth. It was developed to meet the needs of serious 6 meter FM hams. It has twice the gain of the standard AR-6. If you are a serious 6-meter FM ham requiring the most gain and wide-area coverage from a repeater or home station, the ARX-6 is made for you.

ARX-6
6 meters, 50-54 MHz, 24' tall

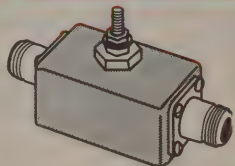
ARX-6

Ringo Rangers for the Impossible QTH!

Ringo half-wavelength verticals feature a low angle of radiation and direct DC ground for lightning protection. The Ringo is very easy to assemble and comes in models for all popular VHF and UHF frequencies.

- AR-2** 2 meters, 135-160 MHz 4' tall
AR-6 6 meters, 50-54 MHz 10' tall
AR-10 10 meters, 28-29.7 MHz 18' tall
AR-220 220-225 MHz 3' tall

Lightning Arresters



Fast Action Gas Discharge

Protect your valuable equipment while reducing atmospheric noise with these sophisticated new lightning arresters. They feature fast action, replaceable gas discharge elements. Superior design and manufacturing gives better performance with less insertion loss.

- LAC4** 200 watt w/ SO-239 connector
LAC4H 2 kW with SO-239 connector
LAC4N 200 watt with N-connector
LAC4NH 2 kW with N-connector
LC2 200 watt replacement cartridge
LC2KW 2 kW replacement cartridge

**Call Toll-Free
for Cushcraft
Discounts**

AR-270 and AR-270B Dual Band

The highest performance-to-size ratio is yours with these rugged antennas. They're the right choice for repeater, simplex, packet or microsat operation.

The **AR-270** "Dual Wonder" is only 3.75 feet high and is perfect for condos and other restrictive QTH's. You will be up and running in the time it takes to tighten two clamps and a PL259.

The **AR-270B** gives high gain (6.5 dB) with a low angle of radiation and is only 7.7 feet high. It is computer optimized with two 5/8 wave-length collinear elements on 2 meters and four 5/8 wavelength elements on 70 cm.

- AR-270** 144-148 / 430-450 Mhz
AR-270B 144-148 / 430-450 Mhz

AR-270B

ARX-270 Fiberglass Dual-Band

Cushcraft's high performance, fiberglass base antenna has a gain of 9 dB on VHF and 12 dB on UHF. It features non-metallic couplings, thick-wall fiberglass, extruded base clamps, factory tuning, and factory-installed pigtail with choice of UHF or N connector. UPS shippable.

ARX-270 144-148 / 430-450 MHz 16.5' tall

Ringo Ranger II

Ringo Ranger II (**ARX-2B**) has more gain, less wind load, and better mechanical strength than most other 2 meter antennas. You'll find FM repeater or simplex and packet operation more satisfying with this amazing antenna. Three 5/8 wave radiating elements and an adjustable 1/8 wave phasing stub give 7 dB gain over a 1/4 wave whip. The antenna has RF decoupling radials and is DC grounded for lightning protection. There are more Ringo Rangers in use than **ANY OTHER** base station ham antenna.

ARX-2B 135-160 MHz 14' high

ARX-2B

Ringo Ranger

A fantastic antenna. The Ringo Ranger should be your antenna where good gain is required, but space does not allow extra height and decoupling radials. 5.5 dB gain.

ARX-2 135-160 MHz 9.3' high

Cushcraft HF Antennas

Model	Bands	Ele	Max Gn dBd	MaxFB dB	SWR	Turn Rad ft(m)	Longest Ele ft(m)	Boom Lgth ft(m)	Boom Dia in (mm)	MxMst in (mm)	Surface sq ft(sq m)	Ship Wgt lbs	Sugg. List
A3S	10/15/20 meters	3	8	25	1.2:1	15.5 (5.6)	27.75 (8.3)	14 (4.2)	1.5 (38)	2 (51)	4.36 (.47)	27	\$496.95
A3WS	12/17meters	3	8	25	1.2:1	14.4 (4.4)	25.1 (7.66)	14 (4.27)	1.5 (3.81)	2 (51)	4.1 (.38)	23	\$390.95
A4S	10/15/20 meters	4	8.9	25	1.2:1	18.4 (5.6)	32 (9.75)	18 (5.4)	2.0 (51)	2 (51)	5.5 (.51)	37	\$596.95
ASL2010	13.2 - 32 MHz	8	6.4	15-20	1.2:1	19.3(5.9)	38(11.6)	18(5.5)	2.0(5.1)	2(5.1)	10.1(.93)	55(25.5)	\$828.00
AV-3	10/15/20 meters	1			1.2:1	14 (4.2)ht			1.375 (35)	1.75 (45)	1.02 (.1)	7	\$121.95
AV-5	10/15/20/40/80 meters	1			1.2:1	25 (7.4)ht			1.375 (35)	1.75 (45)	1.89 (.19)	10	\$218.95
AP-8A	10/12/15/17/20/30/40/80 meters	1			1.2:1	26 (7.92)ht			1.375 (35)	1.75 (45)	1.7 (.16)	10	\$273.95
AV-80	80 meters	1			1.2:1	18(5.5)ht				1.75 (45)	4.2(.42)	21(9.1)	\$444.00
R-7000	10/12/15/17/20/30/40 meters #	1	3 *		1.2:1	24 (7.31)ht			1.75(44)	2.125	2 (.2)	18	\$510.00
AR-10	10 meters	1	3.75		1.2:1	17.6 (5.3)ht			1.25(32)	1.25(32)	1.68 (.17)	4	\$70.95
20-4CD	20 meters	4	10	30	1.2:1	23.75 (7.2)	36.1 (11.0)	32 (9.75)	2.13 (54)	2 (51)	8.1 (.75)	55	\$625.95
20-3CD	20 meters	3	8	30	1.2:1	20 (6.1)	35.9 (10.9)	20 (6.1)	2.0 (51)	2 (51)	5.5 (.51)	30	\$437.95
40-2CD	40 meters	2	5.5	20	1.2:1	23.93 (7.29)	43 (12.9)	23 (6.9)	2.13 (54)	2 (51)	6.38 (.57)	44	\$625.95
TEN-3	10 meters	3	8	25	1.2:1	10 (3.01)	17.8 (5.43)	8 (2.44)	1.38(35)	2 (51)	2.0 (.2)	10	\$150.95
10-3CD	10 meters	3	8	30	1.2:1	10 (3.05)	17.66 (5.38)	10 (3.1)	1.63 (41)	2 (51)	2.3 (.21)	11	\$232.95
10-4CD	10 meters	4	10	30	1.2:1	11.5 (3.5)	17.58 (5.34)	16 (5.18)	1.75 (44)	2 (51)	3.1 (.29)	18	\$299.95
15-4CD	15 meters	4	10	30	1.2:1	15.5 (4.72)	23.33 (7.11)	20 (6.10)	2.0 (51)	2 (51)	4.5 (.42)	25	\$353.95
15-3CD	15 meters	3	8	30	1.2:1	13.5 (4.11)	23.26 (7.06)	14 (4.27)	2.0 (51)	2 (51)	3.4 (.32)	20	\$304.95
D3W	12/17/30 meters	1			1.2:1	17 (5.18)	34(10.36)			2 (51)	.9 (.08)	11	\$248.95
D3	10/15/20 meters	1			1.2:1	13 (3.96)	25.7 (7.83)			2 (51)	.9 (.08)	9	\$243.95
D4	10/15/20/40 meters	1			1.2:1	18 (2.49)	35.8 (10.91)			2 (51)	1.3 (.12)	13	\$330.95
D40	40 meters	1			1.2:1	21 (6.40)	42.25 (12.87)			2 (51)	1.3 (.12)	12	\$296.95

ht= height * dB! #80 meters with optional R-80 kit

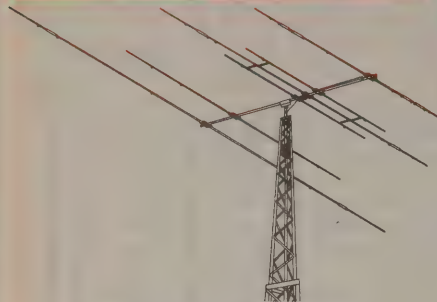
Call HRO for LOW Cushcraft Pricing

Cushcraft VHF / UHF Antennas

Model	Bands	Ele	Max Gain dBd	Max F/B dB	Polarization	Turn Rad ft (m)	Long Ele ft (m)	Boom Lg ft (m)	MxMst in (cm)	Surface sq ft (sq	Ship Wgt lbs	Sugg. List
124-WB *	144-148	4	10.2	24	Either	4 (1.2)	3.4 (1.0)	4 (1.2)	2.0 (5.0)	.34 (.03)	3	\$72.95
13B2	144-148	13	15.8	26	Either	8.9 (2.7)	3.4 (1.0)	15 (4.6)	2.0 (5.0)	1.8 (.17)	7	\$142.95
224-WB *	220-225	4	10.2	24	Either	3 (9)	2.2 (.67)	3 (9)	2.0 (5.0)	.23 (.02)	2	\$67.95
225-WB	220-225	15	15.5	24	Either	5.8 (1.8)	2.2 (.67)	10 (3)	2.0 (5.0)	.95 (.09)	6	\$148.95
26B2	144-148	26	18.8	26	Vertical	10.4 (3.2)	3.4 (1.0)	15 (4.6)	2.0 (5.0)	4.8 (.5)	22	\$405.95
A148-1S	2 m	3	7.8	25	Either	2.8 (.85)	3.3 (1.0)	2.8 (.85)	2.0 (5.0)	.27 (.02)	1.5	\$46.95
A148-10S	2 m	10	13.2	24	Either	6 (1.8)	3.3 (1.0)	12 (3.6)	2.0 (5.0)	1.21 (.11)	6	\$85.95
A148-20S	2 m	20	16.2	24	Either	6.6 (2.1)	3.3 (1.0)	12 (3.6)	2.0 (5.0)	2.8 (.37)	15	\$232.95
A148-20T	2 m	10	11.1	20	Dual	6.8 (2.0)	3.3 (1.0)	10.8 (3.2)	1.5 (3.8)	1.42 (.13)	7	\$118.95
17B2	144-145	17	18	26	Horizontal	17.3 (5.3)	3.4(1.0)	31 (9.5)	2.0 (5.0)	3.9 (.4)	16	\$246.95
220-B	220-225	17	17.2	30	Horizontal	9 (2.6)	1.1 (.34)	19 (5.8)	2.0 (5.0)	2.6 (.24)	11	\$181.00
424-B	424-435	24	18.2	30	Horizontal	10 (3.1)	1.1 (.34)	17.4 (5.3)	2.0 (5.0)	2.3 (.21)	5	\$155.00
719-B	430-450	19	15.5	25	Either	7.25 (2.2)	1.15 (.34)	13.5 (4.1)	2 (5.1)	1.2 (.11)	5.6(2.55)	\$142.00
729-B	430-440	29	17.8	25	Either	12.5 (3.8)	1.15(.34)	22.2(6.75)	2 (5.1)	2.2 (.21)	8.6 (3.9)	\$220.00
A449-6S*	440-450	6	10.5	18	Either	2.9 (.88)	1.1 (.34)	2.9 (.88)	2.0 (5.0)	.3 (.03)	3	\$59.95
A449-11S	440-450	11	13.2	20	Either	2.8 (.88)	1.1 (.34)	4.2 (1.4)	2.0 (5.0)	.39 (.04)	4	\$83.95
A50-3S	6 m	3	8	20	Horizontal	6 (1.8)	9.8 (3.0)	6.0 (1.8)	2.0 (5.0)	1.8 (.17)	7	\$110.95
A50-5S	6 m	5	10.5	24	Horizontal	7.5 (2.3)	9.8 (3.0)	12 (3.7)	2.0 (5.0)	2.7 (.25)	11	\$161.95
A50-6S	6m	6	11.6	26	Horizontal	11 (3.4)	9.8 (3.0)	20 (6.1)	2.0 (5.0)	4.5 (.4)	18	\$299.95
617-6B	6 m	6	14	30	Horizontal	17.7 (5.4)	9.5 (2.9)	34 (10.4)	2.0 (5.0)	4.8 (.45)	26	\$399.95
AFM-4DA	144-148	4	6/9 dB		Vertical		23 (7) ht		2.0 (5.0)	2.54 (.24)	7	\$148.95
AFM-24DA	220-225	4	6/9 dB		Vertical		15 (4.6) ht		2.0 (5.0)	1.85 (.17)	6	\$131.95
AFM-44DA	435-450	4	6/9 dB		Vertical		8 (2.4) ht		2.0 (5.0)	1.13 (.10)	5	\$114.95
AR-2	135-160	1	3.75 dB		Vertical		3.9 (1.2) ht		1.25 (3.2)	.21 (.02)	2	\$49.95
ARX-2	137-160	1	4.50 dB		Vertical		9.3(2.8) ht		1.25 (3.2)	.33 (.03)	4	\$60.95
ARX-2B	134-164	1	7.00 dB		Vertical		14 (4.2) ht		1.25 (3.2)	.5 (.046)	6	\$72.95
ARX-220B	220-225	1	7.00 dB		Vertical		9.3 (2.8) ht		1.25 (3.2)	.3 (.03)	5	\$72.95
ARX-6	50-54	1	5.5 dB		Vertical		24 (7.3)ht		1.75 (4.4)	1.9 (.18)	7.5 (3.4)	\$252.00
AR-270	144-148 440-450	1	3.7 5.5		Vertical		3.75 (1.13)ht		2.0 (5.0)	.27 (0.03)	2	\$87.95
AR-270B	144-148 440-450	1	5.5 7.5		Vertical		7.7 (2.3)ht		2.0 (5.0)	.47 (0.05)	3	\$125.00
ARX-270N	144-148	1	9.0		Vertical		16.5 (5.07)ht		2.0 (5.0)	.95 (0.09)	5	\$273.95
ARX-270U	430-450	1	12.0		Vertical				2.0 (5.0)			
A270-6S	144-148 430-450	3	7.8 7.8	20 18	Either	2.8 (.85)	3.4 (1.04)	2.8 (.85)	2 (.51)	.3 (.02)	1.7	\$73.00
A270-10S*	144-148 440-450	5 5	10.0 10.0	20.0 18.0	Either	6 (1.8)	40.3 inches (1.02)	6.17 (1.9)	2.0 (5.0)	.725 (.07)	2	\$99.95
ARX-450B	435-450	1	7.00 dB		Vertical		5 (1.5) ht		1.0 (2.5)	.2 (.02)	1	\$72.95
AR-6	6m	1	3.75 dB		Vertical		10.1 (3.1)ht		1.25 (3.2)	.37 (.03)	3	\$70.95
CS-270M	144-148		3.70 dB		Vertical Mobile		34 inches (.88)					
Mobile	440-450	1	6.00 dB								5	\$88.95

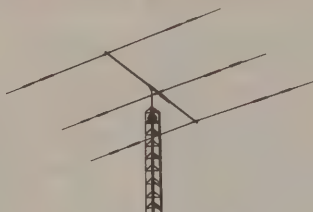
* End mount Antenna ht= antenna height

HF Tribanders



Explorer 14 (395S)

Give your solid state transceiver a break; the Explorer 14 is the most broadbanded HF antenna around. Our exclusive Para-Sleeve design optimizes bandwidth without a tuner. Best performance on a 14' boom. A 30 or 40 meter add-on kit is available for added coverage. **Suggested List Price \$527.95**



TH3 Mk4 (388S)

The classic design in a small tribander. Performance and value in one small package. Perfect for home stations, this antenna is the choice for DXpeditions too! **Suggested List Price \$380.95**



TH7 DX (391S)

Nothing performs like the world famous TH7 DX! This high performance tribander gives you the competitive edge you want on 10, 15, and 20 meters. **Suggested List Price \$795.95**

DB-1217

The DB-1217 features a 14 foot boom in 4 pieces ideal for DXpedition packaging. The antenna covers the 12 and 17 meter bands, handles full legal power and uses the standard Hy-Gain rugged boom to mast clamp. **Suggested List Price \$TBA**

HF Vertical



DX 77 Advanced Vertical Windom

The unique design of this vertical antenna provides no-compromise performance without the need for ground radial wires. The superior mechanical design, high power capabilities and 55% greater bandwidth than competitive verticals on 20 and 40 meters make it an exceptional value. Covers the Ham bands 10 through 40 meters, including the WARC bands. Automatic band switching and low angle of radiation for DX. Features double-wall tubing, steel mast clamps and stainless steel hardware. 29' tall, it has a new easy-tilt mount making it convenient to lower for tuning. May be mounted on a pole, chimney, rooftop, or deck, or used for portable operation. Comes with Telex's 2 year limited antenna warranty. **Suggested List Price \$419.95**

tion for DX. Features double-wall tubing, steel mast clamps and stainless steel hardware. 29' tall, it has a new easy-tilt mount making it convenient to lower for tuning. May be mounted on a pole, chimney, rooftop, or deck, or used for portable operation. Comes with Telex's 2 year limited antenna warranty. **Suggested List Price \$419.95**

Five HF Bands



TH11 DX (398S)

A unique design giving you the frequency coverage of a log periodic plus the performance of a monobander. Covers 10, 12, 15, 17, and 20 meters with one boom and feedline. **Suggested List Price \$1079.95**

VHF/UHF Base Antennas

V42R (331S)

Expand your capabilities with this dual band performer. This omnidirectional antenna gives you 3 dBd gain on 2 meters as well as 5 dBd on 7 cm. Comes complete with a type N connector. **Suggested List Price \$159.95**



V4R (337S-1)

You can't beat this antenna! With wind survivability to 220 M.P.H., the V4R provides 3 dBd gain with a wide coverage pattern. It features two collinear 5/8 wave antennas fed in phase along with 2 sets of radials that decouple the lower radiator from the mast. Tunable from 400-475 MHz. Comes with a type N connector. **Suggested List Price \$98.95**



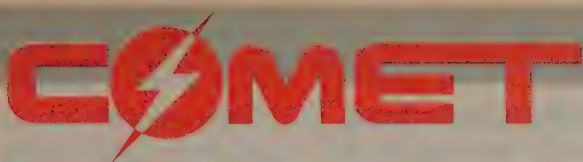
V2R (335S-1)

A rugged antenna for 2 meters, the V2R provides 3 dBd gain with a wide coverage pattern. It features two collinear 5/8 wave antennas fed in phase along with 2 sets of radials that decouple the lower radiator from the mast. Tunable from 138-175 MHz with wind survivability to 120 M.P.H. **Suggested List Price \$99.95**



V-6R

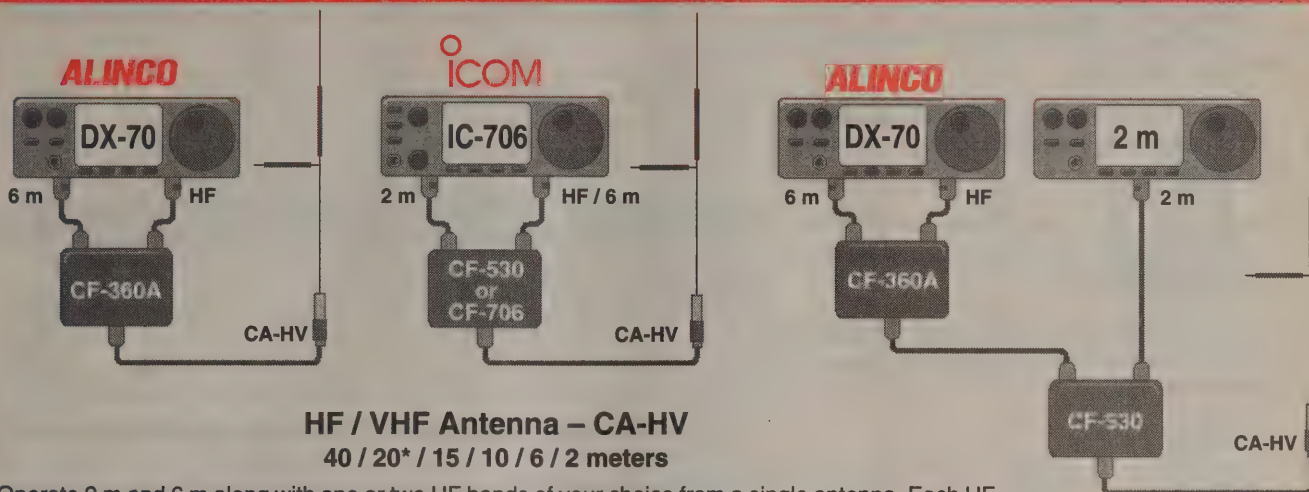
The V-6R antenna design is based on 2 collinear 5/8 wave vertical radiators and covers 51 to 54 MHz. The antenna also features a 500 watt enclosed coil and two sets of 1/4 wave radials which provide complete mast decoupling and optimum pattern and gain. The rugged design will withstand wind speeds up to 80 MPH. The V-6R also features a DC ground for lightning protection. Call HRO for pricing.



HF / VHF ANTENNAS

Antennas specifically designed for use with the Icom IC-706 and the Alinco DX-70

Keep It Simple With a Single HF / VHF Antenna



HF / VHF Antenna – CA-HV
40 / 20* / 15 / 10 / 6 / 2 meters

Operate 2 m and 6 m along with one or two HF bands of your choice from a single antenna. Each HF coil tunes independently. This 61" tall antenna has a convenient fold-over feature to allow easy entry into parking structures, drive-throughs, etc. A wide variety of mounting options are available: hole, hatchback, pipe clamp, trunk lip, or rain gutter. See the chart on page 90. * L-14 optional 14 MHz coil

Combine Separate VHF and HF Antennas With Comet Duplexers

VHF Antennas SB-15 / SB-14

6 m / 2 m / 440 MHz

These triband antennas can be used as dualbanders. Both are 61" tall with fold-over capabilities and easy mounting options. See the chart on page 90.



HF Antenna HA-4S

40 / 20* / 15 / 12 / 10 meters

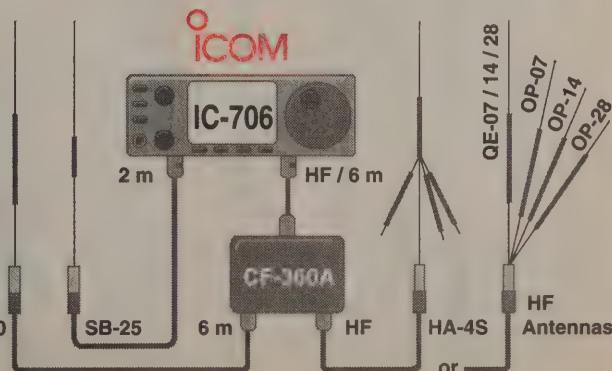
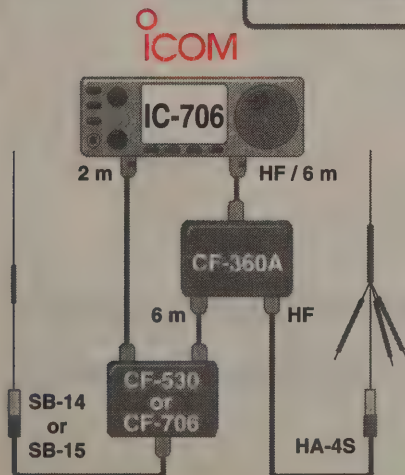
Operate any 4 of the 5 available HF coils at a time. Each coil tunes independently. Tune from band to band without the need to change coils, plugs, whips, etc. The antenna has a convenient fold-over feature. A wide variety of mounting options are available. See the chart on page 90.

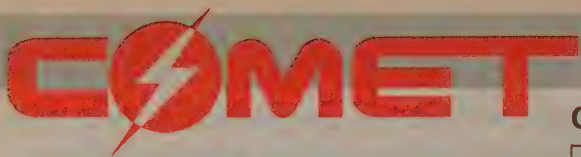
* L-14 optional 14 MHz coil

Other Options

Separate 2 m and 6 m antennas can be used along with the HA-4S avoiding a duplexer. HRO has a complete line of Comet single band HF antennas for 80 m, 40 m, 20 m, 15 m and 10 m. All approximately 40" to 45" in height. QE antennas use optional whips.

Call HRO for more information and our discount prices.

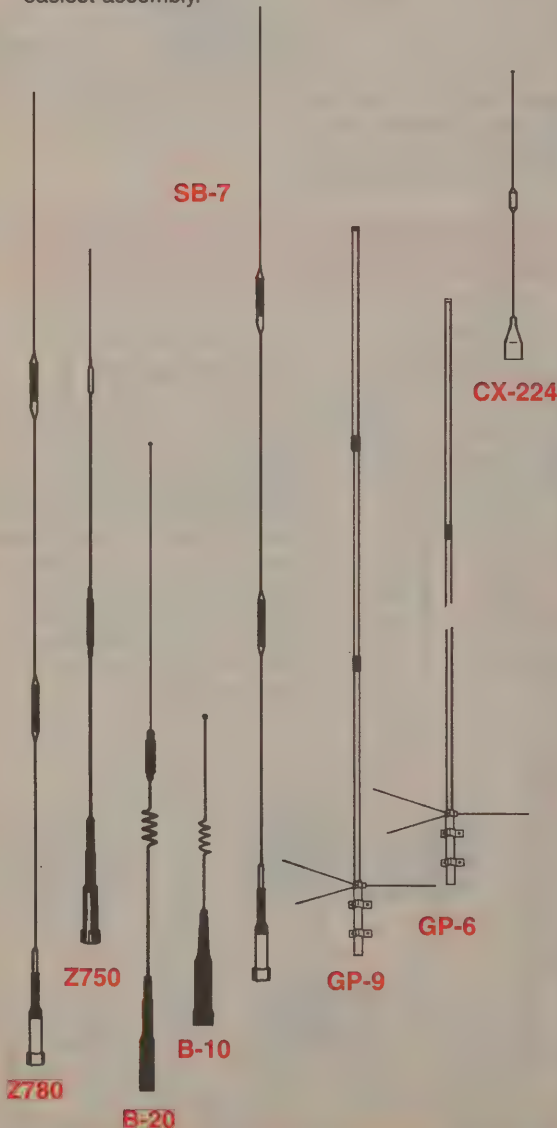




Dual- & Tri-band VHF / UHF Antennas

Comet developed the Super Linear Converter (SLC) System to increase the actual gain of Dual and Triband antennas.

- A complete pre-formed phasing coil and phosphorus copper element eliminates additional components and gain loss.
- The SLC is electrically very efficient, providing a low angle of radiation, directly to the horizon, for maximum performance.
- Comet sectional antennas use ABS (Transparent to RF) connecting joints for the finest pattern and easiest assembly.



Comet Dual-Band Antennas

MODEL	BANDS	GAIN	MAX PWR Watts	CONN	WGT Lbs' oz	LEN FT' in"	MAX WIND SPEED MPH	HRO Price
Dual Band Base Station Repeater Antennas								
GPX-2010	2m/70cm	9.5/13.2	200	SO-239	7'14"	23'4"	65 w/o guys 90 w/guys	\$379.95
GP-9/GP-9N	2m/70cm	8.5/11.9	200	SO/N	5'11"	17'8"	90	\$209.95
GP-6	2m/70cm	6.5/9.0	200	SO-239	3'8"	10'5"	90	\$149.95
GP-3	2m/70cm	4.5/7.2	200	SO-239	2'12"	5'11"	112	\$99.95
CA-1243Z	70cm/23cm	9.4/12.8	150/50	N-Female	3'8"	7'5"	90	\$149.95
CA-1243E	70cm/23cm	6.0/8.4	150/50	N-Female	1'13"	3'4"	112	\$94.95
Dual Band Mobile Antennas - All Black Anodized								
SBB-7/SBB-7NMO	2m/70cm	4.5/7.0	70	PL/NMO	-	4'7"	-	\$89.95
SBB-5/SBB-5NMO	2m/70cm	3.0/5.5	120	PL/NMO	-	3'2"	-	\$62.95
SBB-2/SBB-2NMO	2m/70cm	2.15/3.8	100	PL/NMO	-	20"	-	\$39.95
B-10	2m/70cm	-2/1.5	50	PL-259	-	12"	-	\$39.95
B10NMO								\$39.95
B-20	2m/70cm	2.15/5.0	50	PL-259	-	30"	-	\$58.95
B20NMO								\$62.95
SB-214W	2m/220MHz	1.7/3.4	100	PL-259	-	2'11"	-	\$62.95
CHL-350	10m/6m	-2/1.5	200	PL-259	-	7'0"	-	\$79.95
NEW Z Series With Theft-Resistant Lock								
Z750	2m/70cm	2.15/5.5	200	PL-259	-	3'3"	-	\$62.95
Z780	2m/70cm	4.5/7.2	150	PL-259	-	5'2"	-	\$82.95

Comet Tri-Band Antennas

MODEL	BANDS	GAIN	MAX PWR Watts	CONN	WGT Lbs' oz	LEN FT' in"	MAX WIND SPEED MPH	HRO Price
TriBand Base Station Repeater Antennas								
GP-15	6m/2m/70cm	3/6.2/8.6	200	SO-239	2'15"	7'11"	90	\$159.95
GP-93	2m/70cm/23cm	4.5/7.2/10	200	N-Female	2'8"	5'7"	112	\$139.95
GP-98	2m/70cm/23cm	6.5/9.0/13.5	100	N-Female	3'6"	9'4"	90+	\$209.95
CX-333	2m/220/70cm	6.5/7.8/9.0	120	SO-239	3'4"	10'2"	112	\$184.95
TriBand Mobile Antennas								
SB-15	6m/2m/70cm	2.15/4.5/7.2	120	PL-259	-	4'10"	-	\$99.95
SB-97	2m/70cm/23cm	3.0/6.8/9.6	100	N-Male	-	3'3"	-	\$89.95
CX-224	2m/220/70cm	2.15/3.2/5.5	150	PL-259	-	5'1"	-	\$79.95
CX-224NMO	2m/220/70cm	2.15/3.2/5.5	150	NMO	-	5'1"	-	\$79.95
CA-HV	40/(20)/15/10/6/2m	HF 0 dBi 2m 3.4 dBi	120 SSB HF 100W FM 6/2m	PL-259	MAX 1'3"	MAX 6'3"	-	\$134.95
L-14	Opt 20M coil for CA-HV						-	\$36.95
HA-4S	40/(20)/15/10m	0 dBi	120 SSB 7-24MHz 200W SSB 14MHz	PL-259 /NMO		4'4"	-	\$179.95
L-14HS	Opt 20M coil for HA-4S						-	\$39.95

Comet Single Band and HT Antennas

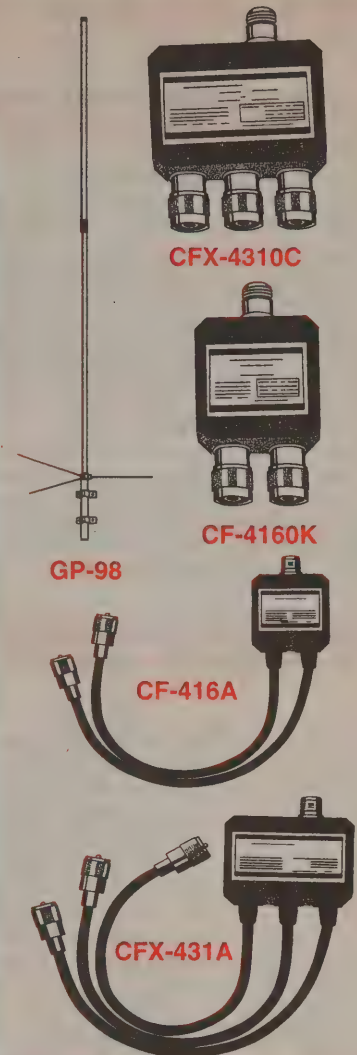
MODEL	BANDS	GAIN	MAX PWR Watts	CONN	LEN FT' in"	HRO Price
Single Band Antennas						
SBB-25/SBB-25NMO	2m	4.1	100	PL-259/NMO	4'8"	CALL
SB-44	70cm	5.5	130	PL-259	37"	\$44.95
HT Antennas						
CH-32 MINI Ant	2m/70cm	-	10	BNC	1.75"	\$33.95
SMA-501 MINI Ant	146/446 MHz	-	10	SMA	1.5"	\$29.95
SMA-3	2m/70/23cm	1.2/1.7/3.4	-	SMA	9.75"	\$41.95
CH-72S	2m/70cm	-3/2	50	BNC	15"	\$29.95
SH-95	2m/70/23cm	1.5/2/5.5	10	BNC	15"	\$49.95

ANTENNAS & ACCESSORIES

Comet High-Power Duplexers and Triplexers

Zinc-alloy, die-cast, twin cavity, low input loss, high-isolation, and high-power. Modernize your station with Comet high-performance antenna products.

MODEL	PORT	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol dB	Mix Conn	Port Conn	HRO Price
CF-416A (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.15 0.25	60 60	SO-239	PL-259 w/leads PL-259 w/leads	\$54.95
CF-416C (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.15 0.25	60 60	N-Female	PL-259 w/leads N-Male w/leads	\$54.95
CF-4160I (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads N-Male w/o leads	\$52.95
CF-4160K (2m/70cm)	LPF HPF	1.3-150MHz 400-540MHz	450 300	800 500	0.1 0.2	60 60	SO-239	PL-259 w/o leads PL-259 w/o leads	\$52.95
CF-413B (70cm/1.2GHz)	LPF HPF	1.3-150MHz 350-500MHz 840-1.4GHz	450 300 100	800 500 200	0.25 0.25 0.4	55 55 55	N-Female	PL-259 w/leads N-Male w/leads	\$74.95
CF-530 (6M/125-470)	LPF HPF	1.3-90MHz 125-470MHz	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/leads PL-259 w/leads	\$74.95
CF-360A (10m/6m)	LPF HPF	1.3-30MHz 50-240MHz	350 350	600 600	0.2 0.2	45 45	SO-239	PL-259 w/leads PL-259 w/leads	\$69.95
CF-142 (2m/220MHz)	LPF HPF	1.3-1150MHz 220-480MHz	300 200	600 400	0.2 0.3	40 50	SO-239	PL-259 w/leads PL-259 w/leads	\$79.95
CF-706 (2m/6m)	LPF HPF	1.3-56 MHz 75-320 MHz	350 350	600 600	0.4 0.4	40 40	SO-239	PL-259 w/cable PL-259 w/cable	\$74.95
CFX-431A (2m/70cm/1.2)	LPF BPF HPF	1.6-60MHz 100-150MHz 350-500MHz 840-1.4GHz	600 450 300 100	1KW 800 500 200	0.2 0.2 0.3 0.4	50 50 50 50	N-Female	PL-259 w/leads N-Male w/leads N-Male w/leads	\$89.95
CFX-4310B (2m/70cm/1.2)	LPF BPF HPF	1.6-60MHz 100-150MHz 350-500MHz 840-1.4GHz	600 450 300 100	1KW 800 500 200	0.15 0.25 0.25 0.3	50 50 50 50	N-Female	PL-259 w/leads N-Male w/leads N-Male w/leads	\$84.95
CFX-4310C (2m/70cm/1.2)	LPF BPF HPF	1.6-60MHz 100-150MHz 350-500MHz 840-1.4GHz	600 450 300 100	1KW 800 500 200	0.15 0.25 0.25 0.3	50 50 50 50	N-Female	PL-259 w/leads N-Male w/leads N-Male w/leads	\$84.95
CFX-514 (6m/2m/70cm)	LPF BPF HPF	1.3-90MHz 130-200MHz 380-500MHz	450 450 300	800 800 500	0.2 0.25 0.3	55 55 55	SO-239	PL-259 w/leads PL-259 w/leads PL-259 w/leads	\$84.95
CFX-514J (6m/2m/70cm)	LPF BPF HPF	1.3-90MHz 130-200MHz 380-500MHz	450 450 300	800 800 500	0.15 0.2 0.25	55 55 55	SO-239	SO-239 w/o leads SO-239 w/o leads SO-239 w/o leads	\$79.95
CFX-324A (2m/220/70cm)	LPF BPF HPF	1.3-150MHz 200-320MHz 390-500MHz	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/leads PL-259 w/leads PL-259 w/leads	\$88.95
CFX-324B (2m/220/70cm)	LPF BPF HPF	1.3-150MHz 200-320MHz 390-500MHz	350 350 350	600 600 600	0.2 0.25 0.3	40 40 40	SO-239	PL-259 w/o leads PL-259 w/o leads PL-259 w/o leads	\$85.95



GP-98

CFX-4310C

CF-4160K

CF-416A

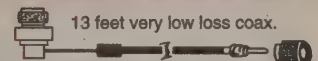
CFX-431A



3D4M(N)

Detachable Connector

RG-188 provides easy entry into the vehicle from an exterior mount.



10 inches

RG-188

CK-3M5/CK-5N

Detachable Connector

Comet Mobile Mounting Systems

Comet has a wide variety of mobile mounts. Choose the mount and coax cable assembly that best fits your personal needs. All Comet cables have detachable connectors.

MODEL	DESCRIPTION	HRO Price
3D4M	Standard coax assy. 13ft low loss (3.5mm) coax w/UHF Connectors	\$24.95
3D4N	-Ditto- But with N-Type Connectors	\$28.95
CK-3M5	17ft high quality cable inc 12" RG-188 to avoid water leak/cable damage. UHF Conn.	\$39.95
CK-5N	-Ditto- But with N-Type Connectors	\$47.95
5D4N	13ft VERY low loss (5mm) cable assy. For 1.2GHz. N-Type Connectors	\$34.95
The following Mounts are w/o Coax. Choose from the Cable Assembly Above.		
RS-500	Heavy Duty Gutter Mount	\$29.95
RS-520	Small/Heavy Duty Trunk/Hatch Mount	\$29.95
RS-21	Multi-Purpose Mount, Trunk-Lip/Hatch-Back, Black, Adj to any position	\$34.95
RS-9	Trunk-Lip Mount, Black. For small antennas. (B-10, B-20, CHL-23J, etc)	\$14.95
CM-5M	Standard Hvy-Duty Mag Mt w/RG-58A/U, Coax, UHF Conn, Max Antenna Height 4ft	\$39.95
MS-5LXNN	-Ditto- But with N-Type Connectors	\$61.95
GR-5M	Deluxe trunk-lip mount w/CK-3M5 Cable, UHF connectors	\$67.95
GR-5N	Deluxe trunk-lip mount w/CK-5N Cable, N-Type connectors	\$69.95

Free UPS Brown Shipping on Most Orders Over \$100.



Multi-band HF Verticals

6-BTV / 5-BTV / 4-BTV

Models 6-BTV (10, 15, 20, 30, 40, 75 / 80 meters), 5-BTV (10-80 meters), and 4-BTV (10-40 meters) for base stations. All of these vertical antennas allow full legal limit on SSB or CW. The antennas are constructed of 1 1/4" heavy wall, high strength aluminum. Feed with 50 ohm coax. VSWR 2:1 or better at band edges on 10-40 meters and up to 100 kHz on 75 / 80 meters.

30-MTK

Add the 30 meter band to the 4-BTV or 5-BTV with the 30-MTK. This will provide full band coverage of the 30 meter band and will not affect normal operation of the other bands. The modification is easy to install with all hardware required included. **HRO Price \$41.95**

2m Verticals

G7-144

The G7-144 is designed for fixed station or repeater operation. The antenna provides 7dB gain with an extremely low angle of radiation. It is constructed of high strength aluminum and fiberglass using stacked 5/8 wave radiators. Uses a type "N" connector.

G6-144B

G6-144B

The G6-144B is a 6dB gain antenna for base or repeater use. The antenna is totally self supporting and is constructed of high-strength aluminum. Uses an SO-239 connector.

220 & 440 Verticals

G7-220

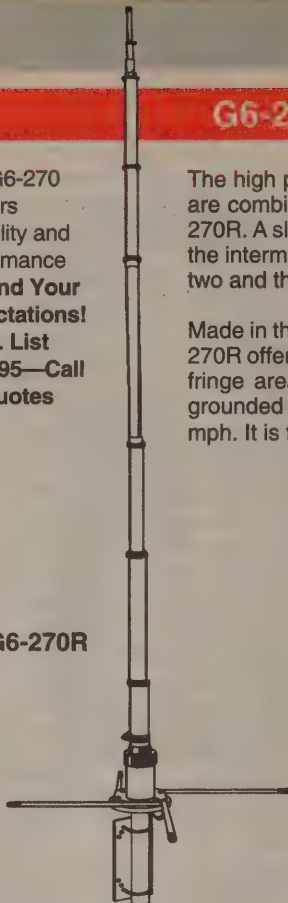
The G7-220 is of similar design and construction as the 2 meter G7-144. It is designed for base or repeater operation, provides 7dB of gain and is constructed of high-strength aluminum and fiberglass. Uses a type "N" connector.

G6-440

The G6-440 is a 6dB gain antenna for base or repeater usage for the 440 MHz band. It is provided with the vertical component assembled. The antenna is constructed from high-strength aluminum and fiberglass. Uses a type "N" connector.

The G6-270 delivers reliability and performance **Beyond Your Expectations!**
Sugg. List \$189.95—Call for Quotes

G6-270R



G6-270R Dual Band

The high performance of our well known G6-144 and G6-440 are combined in our 2 m / 440 dual band vertical, model G6-270R. A sleek, one piece tapered fiberglass radome eliminates the intermodulation and mechanical problems associated with two and three piece UHF radome designs.

Made in the U.S.A. of high quality American materials, the G6-270R offers 6 dBd gain (8.1 dBi) on both bands for outstanding fringe area performance. The antenna is shunt-fed and DC grounded for lightning protection and will survive winds to 100 mph. It is factory tuned for quick and easy installation.

Electrical

Max. Power: 200 watts
Gain: 6 dBd VHF
6 dBd UHF
Bandwidth: 3 MHz VHF
10 MHz UHF
Design: 5/8 over 5/8 VHF
4 x 5/8 UHF
Shunt-fed D.C. Ground
Termination: Type N female

Mechanical

Length: 100 inches
Weight: 6 lbs
Wind Survival: 100 mph
Mounting: Hardware included for 1-1/2" mast.
Mounting plate will accept 2" U-bolts (U-bolts not included)

Hustler Antennas

Model	Bands	Mx Gn	VSWR	Top Hat lgth in (mm)	Height ft (m)	Boom Dia in (mm)	Max Mast in (mm)	Wind load lbs (kg)	Ship Wgt lbs (kg)	Sugg. List
6-BTV	10-30-80 m	-	1.2:1	20.3 (506)	24 (7.2)	1.3 (31.3)	1.5 (38.1)	31 (14.1)	17	\$209.95
5-BTV	10 to 80 m	-	1.2:1	20.3 (506)	25 (7.5)	1.8 (43.8)	1.5 (38.1)	29 (13.2)	17	\$179.95
4-BTV	10 to 40 m	-	1.2:1	14.8 (369)	21.4 (6.4)	1.3 (31.3)	1.5 (38.1)	24 (10.9)	15	\$134.95
G7-144*	2m	7 dB	1.5:1	-	15.3 (4.6)	-	1.8 (43.8)	26 (11.8)	10	\$189.95
G6-144B	2m	6 dB	1.15:1	-	9.8 (2.9)	-	1.8 (43.8)	26 (11.8)	7	\$129.95
G7-220*	220 MHz	7 dB	1.2:1	-	10.2 (3.0)	-	1.8 (43.8)	26 (11.8)	7	\$189.95
G6-440*	440 MHz	6 dB	2.1:1	-	7.3 (2.2)	-	2.0 (50.8)	22 (10.0)	5	\$169.95

* Type "N" Connector

Hustler VHF / UHF Mobile Antennas

Model	Band	Max Gain	SWR	Power	Length ft (m)	Weight lbs	HRO Price
RX-440	440 MHz	5.2 dB	1.2:1	100 W	2.3 (.72)	3	\$24.95
CGT-144	2m	5.2 dB	1.15:1	200 W	7.1 (2.1)	2	\$51.95
RX-2	2m	3.4dB	1.5:1	100 W	4.2(1.3)	3	\$24.95
FX-2	2m	3.4dB	1.5:1	100 W	4.2(1.3)	3	\$33.95
SF-2	2m	3.4 dB	1.2:1	100 W	4.2 (1.3)	1	\$14.95
UGM	140-500 MHz	Unity				1	\$21.95
SF-220	220 MHz	3.4 dB	1.2:1	100 W	2.6 (.78)	1	\$14.95

Call Toll-Free For Discount Prices on Hustler Products

VHF / UHF Mobiles

Collinear

The CG-144 and CG-220 are 5.2dB gain collinear antennas for 2m and 220 MHz respectively. These antennas mount with 3/8"x24 thread which will fit the standard Hustler mounts. The CGT-144 and CGT-220 are supplied with a heavy duty trunk mount, 17' of coax and PL-259 connector.

5/8 Wave

Hustler manufactures two series of mobile antennas for 2m and 220 MHz and one for 440 MHz. The FX series comes with a heavy duty magnetic mount and the RX series has a standard duty mount. The antennas are base loaded with a 5/8 wave whip. The FX-2, FX-220, RX-2, RX-220 and RX-440 have black bases and chrome whips.

SF-2 / SF-220

These two antennas are for 2m and 220 MHz respectively. Each is a base-loaded 5/8 wave antenna. These antennas will mount to all the Hustler mounts.

UGM

A magnetic-mount antenna for the traveler. Trim it to operate as a 1/4 wave on 2m, 220 or 440. The mount is supplied with 7' of mini-coax and a BNC connector installed. Attaches directly to most hand-helds. The antenna has a chrome base and stainless steel whip.

Hustler Resonators

Model	Type	Band	Power SSB	Bandwidth 2:1 SWR	Weight lbs	HRO Price
RM-10	Standard	10 m	400 W	150-250 KHz	0.41	\$15.95
RM-11	Standard	11 m	400 W	150-250 KHz	0.41	\$15.95
RM-12	Standard	12 m	400 W	90-120 KHz	0.41	\$15.95
RM-15	Standard	15 m	400 W	100-150 KHz	0.42	\$15.95
RM-17	Standard	17 m	400 W	120-150 KHz	0.44	\$21.95
RM-20	Standard	20 m	400 W	80-100 KHz	0.46	\$21.95
RM-30	Standard	30 m	400 W	50-60 KHz	0.84	\$24.95
RM-40	Standard	40 m	400 W	40-50 KHz	0.84	\$24.95
RM-75	Standard	75 m	400 W	25-30 KHz	1.05	\$26.95
RM-80	Standard	80 m	400 W	25-30 KHz	1.05	\$26.95
RM-10-S	Super	10 m	1 kW	250-400 KHz	1	\$23.95
RM-15-S	Super	15 m	1 kW	150-200 KHz	1.2	\$24.95
RM-20-S	Super	20 m	1 kW	100-150 KHz	1.25	\$28.95
RM-40-S	Super	40 m	1 kW	50-80 KHz	1.8	\$35.95
RM-75-S	Super	75 m	1 kW	50-60 KHz	2.1	\$49.95
RM-80-S	Super	80 m	1 kW	50-60 KHz	2.1	\$49.95

HF Resonators

There are two types of resonators for HF operation. The **standard** units are rated to 400 watts SSB while the **supers** are rated at 1 KW SSB. In addition to the power differences, the usable band width of the Super resonators is 100 percent wider on some bands. See the resonator table below for details.

Mounting HF Mobiles

The HF resonators described require some consideration when mounting.

Mount

A bumper (BM-1) or ball type (C32, SSM-1 or SSM-2) mount is required. Magnetic or trunk type mounts will not hold the weight or wind load.

Mast

All of the resonators must be mounted on top of one of the Hustler masts (MO-1, MO-2, MO-3 or MO-4). The MO-1 and MO-2 hinge to allow for travel or low clearances. The MO-1 is for deck or fender mounting and folds at 15" above the base. The MO-2 is for bumper mounting and folds at 27" above the base. The MO-3 is a fixed length mast for use where it will not be necessary to fold over the antenna.

Hustler has a new mast, the **MO-4** for installations requiring a short mast. The mast is just 22 inches tall. Use standard resonators and whips on 40 and 75m. Use standard resonators on 10, 15 and 20 meters with the new whips provided with the MO-4.

Mounting Accessories

Trunk Mounts

Three trunk mounts are available (HLM, HOT and TLM). All bases accommodate the 3/8"x24 thread and come with 17' of low-loss coax with connectors installed. The mounts are for use with VHF and UHF antennas. Do **NOT** use with the HF mobile antennas.

The **HLM** is specifically for hatch and slanted back vehicles. It has a built-in 180 degree adjustable swivel. The **HOT** is an easy on/off base—just spin the knob. The mount cannot be removed while the trunk is closed. It also features a 180-degree swivel. The **TLM** requires no holes to install. It mounts on flat, horizontal surfaces. The **RVM** is for recreational vehicles.

Bumper Mount

Use the **BM-1** bumper type mount with all Hustler mobile antennas including HF. It uses two "J" bolts and a stainless steel strap that will fit bumpers up to 18". It will not fit the molded, plastic bumpers found on some vehicles. The mount comes with a stainless steel ball. Use the L14-144 (12 foot) or L14-240 (20 foot) coax sets to attach directly to the bottom of the ball mount.

Other Accessories

C-32	Chrome Plated Ball Mount	\$11.95
SSM-1	Ball Mount and Spring	\$46.95
SSM-2	Ball Mount	\$26.95
SSM-3	Stainless Steel Spring	\$24.95
RSS-2	Resonator Spring	\$9.95
QD-2	Quick Disconnect	\$19.95

Hustler Mounts

Model	Base Thread	Coax ft (m)	Swivel	Weight lb	HRO Price
BM-1	3/8" x 24	optional	180°	2	\$19.95
HOT	3/8" x 24	17 (5.1)	180°	1.9	\$29.95
TLM	3/8" x 24	17 (5.1)		1.9	\$20.95
HLM	3/8" x 24	17 (5.1)	180°	1.7	\$22.95
RVM	3/8" x 24	17 (5.1)	180°	1.9	\$20.95

Mobile Mounts



C-32



C-30

SSM-1

Hustler has a collection of mounts and accessories for attaching your antennas to your vehicle. The most common are described below.

C-32 Chrome-plated ball mount
C-30 Chrome-plated spring
C-29 Stainless steel spring

SSM-1 Professional ball mount and spring
SSM-2 Ball mount
SSM-3 Stainless steel spring

L-14-144 Coax lead 12', PL-259 & lugs for Hustler mounts
L-14-240 Coax lead 20', PL-259 & lugs for Hustler mounts

HF MOBILE ANTENNAS



The Ultimate All-Band HF Mobile Antennas

Perth & Perth Plus

The Perth covers 10-80 meters and the Perth Plus adds to that the 6 m and 2m bands. Both are sleek 3-1/2 foot stingers with a 4 foot main shaft where the taps are located. They have a tough, yet flexible fiberglass core, helically wound with copper wire hand tuned to the various "tap" frequency points.

Both offer high performance with low wind drag. Mount them easily on a trunk lip, hatch, or bumper with a standard 3/8 X 24 stud. The stinger retracts into the main shaft for easy stowage. With a proper ground plane, Perth antennas are also suitable for apartment and condo installations.

Outbacker

With the Outbacker™ there is no need to change coils when changing HF bands. The antenna comes in a six foot version that handles up to 300 watts PEP and a four foot Junior model for up to 150 watts PEP.

The antennas are made of fiberglass coated with smooth epoxy resin and polyurethane to provide strength, protection and durability. The pre-tuned copper helical winding has connection sockets constructed of rust-free brass and clearly marked for each band. The antenna covers all bands from 10 to 80 meters.

Mount the antenna with a standard 3/8 X 24 thread. Use Hustlers BM-1 or SSM ball mounts. An optional heavy duty spring and 2 inch base can be mounted at the bottom of the antenna and attached to a PL-259 connector.

Model	Description	HRO Price
Perth	150 watts PEP 10-80m	\$289.95
Perth Plus	150 watts PEP 10-80m plus 6m & 2m	\$299.95
OB	Full size antenna, all bands, 300 watts PEP	\$279.95
OB-JR	Jr. size antenna, all bands, 150 watts PEP	\$269.95
OB-SE	Optional Heavy-Duty Spring and Base	\$99.95

MOBILE MARK, INC. COMMUNICATIONS ANTENNAS

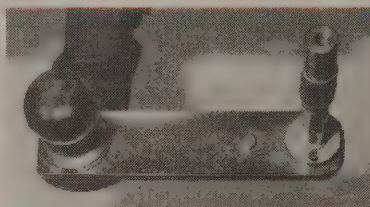
HF Mobile Heliwhips & Kilowhips

The Heliwhip and Kilowhip Series are fiberglass-molded continuously-wound antennas for 10, 15, 20, 40 and 80 meters. Kilowhips are high powered versions of the Heliwhips. Power handling is 100 W for the Heliwhip and 1 kilowatt for the Kilo-whip.

Mobile Mark Whips

Model	Center MHz	Band-width KHz	HRO Price
HW-80	3.8	50	32.95
HW-40	7.25	100	32.95
HW-20	14.2	250	32.95
HW-15	21.2	500	29.95
HW-10	29	1000	29.95
HW-6	52	2000	29.95
KW-10	28.6	800	49.95
KW-15	21.3	400	49.95
KW-20	14.2	250	49.95
KW-40	7.22	60	49.95

Antenna Mount



Tenna Hitch

Where can you mount your antenna on a car with no bumpers? Where can you mount your HF antennas without punching holes? Do you want to pull a trailer and ham at the same time?

Here is the solution. The Tenna Hitch mounts under the ball of your trailer hitch so you can use your regular antenna for HF operation while still pulling a trailer. Tenna Hitch supports all current HF mobile antennas. It comes with all the hardware necessary for mounting on a trailer hitch. HRO Price \$32.95

Maldol

Maldol produces high performance antennas for HF, VHF and UHF applications. There are antennas for the handheld, mobile operation and the base station. A complete line of mounts are available as well as roof mount towers.

Contact your HRO representative for a description and price of your chosen Maldol antenna. Several are described here.

ARTseries

The Art Series are 2m / 70 cm dual band high performance mobile whip antennas. These use the "V-Match" system to ensure full power radiation. A 24K plate center pin reduces loss. The pop-out adapter lets the antenna tilt to avoid damage in low height situations.

Model	Gain dB	Lgth In.	Pwr Watts	Sugg. List
ARD-5B	-3.8	19.6	120	\$59.95
ARD-6	2.6/4.9	26.8	100	\$70.95
ARD-10B	3.0/5.5	34.8	120	\$74.95
ARD-18B	5.0/7.7	65.6	150	\$99.95

Base Station Series

Model	Freq	Lgth Ft.	Pwr Watts	Sugg. List
HS-WX-1	4.5/7.2	6	200	\$99.95
HS-WX2	6.0/8.0	9	200	\$149.95
HS-WX5B	8.4/11.8	23	250	\$269.95

Handheld Antennas

Model	Freq MHz	Lgth In.	Sugg. List
HS-2RB	146	4.4	\$19.95
HS-70RB	440	4.4	\$19.95
AH-209S	146/440	3	\$19.95
HS-702S	146/440	17.6	\$19.95
AH-210R	146/440	Telesc	\$49.95

MAXRAD

These quality VHF / UHF antennas are available. Please call for models, specifications, & quotes.

VHF / UHF MOBILE ANTENNAS

On-Glass Antennas

MOBILE MARK, INC.
COMMUNICATIONS ANTENNAS

On Window Dual Band

Mobile Mark's "On Window" dual band antenna can operate anywhere within the 140-174 and 440-470 MHz bands. Either UHF or VHF can be tuned without affecting the tuning of the other band. It provides unity gain. **HRO Price \$89.95**

Specifications

Frequency	140-174 MHz and 440-470 MHz
Maximum Power	150 Watts
Bandwidth	10 MHz VHF 20 MHz UHF
Radiator Length	24 inches (61 cm)
Cable	RG58U, 15.5 feet



antenna specialists

AP-143

This unique on-glass styling looks like a cellular antenna with a coil in the antenna. Broad banded. No tuning necessary. The length of the whip is only 26 inches. Black coating on the antenna is very attractive. No ground plane required.



Single Band 1/2-Wave

All single band antennas are precut, single 1/2 wave design providing 2.4 dB gain and a maximum power 100 watt rating. The antennas are supplied with a PL-259 connector on 14 feet of premium RG58/U cable. VSWR is 1.5:1 or less.

Model	Description	HRO Price
KG-144-PL	2 meter antenna	\$58.85
KG-220-PL	220 MHz antenna	\$58.85
KG-440-PL	440 MHz antenna	\$49.15

Dual-Band On-Glass

The **KG 2 / 70** enables simultaneous use of the 2 meter and 70 centimeter bands without sacrificing gain and without drilling a hole in your car. The KG 2 / 70 is a half-wave on VHF and a collinear on UHF. It achieves 2.5 dBd gain on 2 meters and 4.5 dBd on 70 centimeters. Its maximum power capability is 50 watts. It comes with 14 feet of RG-58/U coax and a PL-259 connector. The antenna installs easily on any flat surface. Overall height is 36 inches including the mount. Remove the whip without tools for car washes or low garages. **HRO Price \$84.95**

2m / 70 cm Dual-Band Antennas

Brand	Model	Type	Frequency MHz	Gain	Weight oz.	HRO Price
Icom	AH-32	2m	144-148	2.7 dB	8.8	\$66.95
		70cm 5/8 collinear	440-450	5.5 dB		
Kenwood	MA-700	2m 1/2 whip	144-148	3.0 dB	7	\$99.95
		70cm 5/8 stacked	440-450	5.5 dB		
Larsen	NMO 2/70	2m	144-148	2.6 dB	3.9	\$53.95
		70cm 5/8 collinear	440-450	5.5 dB		
Austin	500C	2 m	144 - 148	Unity	6	\$32.95
		70 cm	440 - 450			
	Metropolitan	2 m	144 - 148		6	\$39.95
		220 MHz	220 - 225	Unity		
Valor	GM270	2m	144 - 148	2.6 dB	-	\$29.95
		70 cm	440 - 450	4.0 dB		
	MM270B	2m	144 - 148	-	-	\$39.95
		70 cm	440 - 450	-		
	PM144-440	2m	144 - 148	-	-	\$14.95
		70 cm	440 - 450	-		
	MO144-440	2m	144 - 148	Unity	-	\$16.95
		70 cm	435 - 450	2. dB		

There are more dual-band antennas on the following pages:

Maldol
See Page 88

DIAMOND
ANTENNA

See Page 102

PREMIER
communications
See Page 39

pro-am
See Page 99

COMET
See Page 90



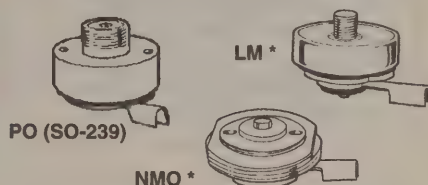
Mobile Antennas

Choose your antenna configuration based on the frequency, base type (e.g., magnetic mount) and thread type (e.g., NMO). Keep in mind that it is necessary to select a base with the same mounting style as the antenna. Typical bases and styles are shown below.

Thread Type

These are examples of each of the thread types. Select one and then select the base.

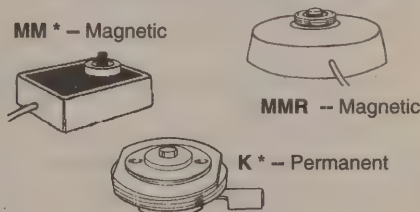
* These are the most popular thread types.



Mount Configurations

Each of these mounts comes in one of the thread types. For example, a magnetic mount with an LM type would be called an LMMM.

*These are the most popular base configurations.



MOUNT BASES

Thread Type	Magnetic Mount	Trunk lip Mount	Permanent Mount
LM	LM-MM	LM-TLM	LM-K
NMO	NMO-MM	NMO-TLM	NMO-K
PO	PO-MM	PO-TLM	PO-K

Antenna Selection

Once the base and thread type are selected, the final step is to choose the antenna. Gain antennas are made of a coil and a whip. Quarter wave antennas are just a whip. For most amateur work, the **frequency choices and gain whips** are:

Frequency	Coil	Whip
2m	150	W490
220MHz	220	W320
440MHz	UHF	W144B

For quarter wave antennas from 2m - 450 MHz, use Q style antenna. Select the thread type and add Q (e.g., NMOQ for a 1/4 wave antenna with an NMO mount).

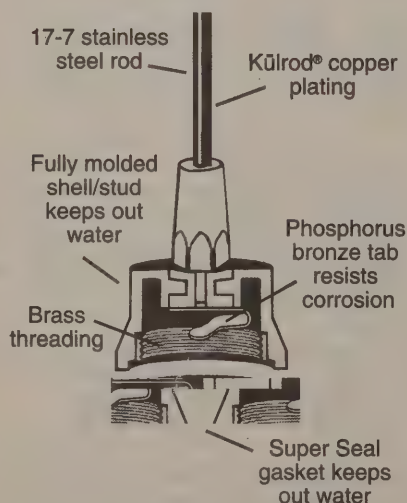
NMO Series

Kūlrod® Mobile Antennas

All Larsen mobile antennas meet the industry's most demanding specs for electrical efficiency and mechanical durability. The result is greater transmit range over many years of service. In addition to the popular Motorola 3/4" (NMO) mounts shown here, mobile antennas for the Larsen Mount (LM) and PO Mount (PO) are excellent choices for amateur use.

- VSWR at 1.5 to 1 or less.
- Greater transmit range.
- Rated 200 watts output.
- 3-year No-Nonsense Warranty™.
- 3/4" Motorola-style mounts.
- Colors: Black coil base/Chrome or all black whip.
- Mounts: NMO K premium quality rooftop.
NMO MM mag mount, 90# pull strength.
NMO TLM heavy duty trunk lid.
NMO TMB electropolished trunk gutter bracket.
- Made in USA.

Model NMO 440



Model NMO 27 (10m)

Band 27-30 MHz
Electrical 1/4 wave, loaded
Gain Unity

Model NMO 50 (6m)

Band 45-54 MHz
Electrical 1/4 wave, loaded
Gain Unity

Model NMO 150 (2m)

Band 144-174 MHz
Electrical 5/8 wave
Gain 3 dBd

Model NMOQ

Band 144-448 MHz
Electrical 1/4 wave
Gain Unity

Model LMC 2/70 B (2m/70cm Dual band)

LMC270 B KUnity 2/27 Dual Band
Black kit
LMC 2/70 B Unity, 2m/70cm, open coil, Black

Model NMO 220 (1.25m)

Band 220-225 MHz
Electrical 5/8 wave
Gain Unity

Model NMO 440 (70cm)

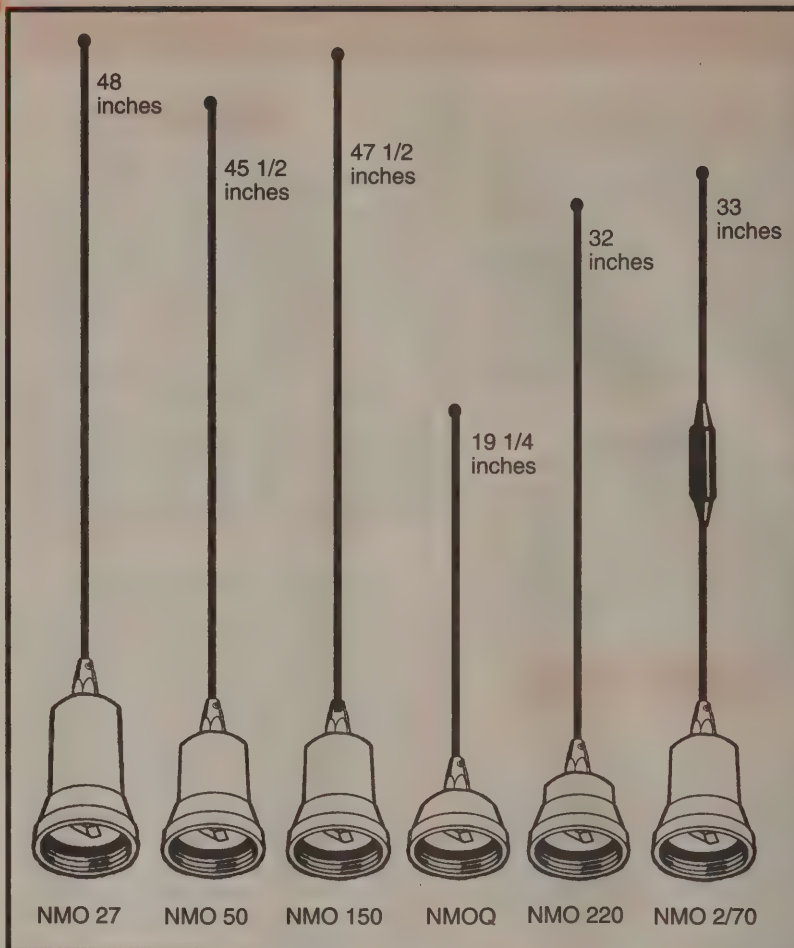
Band 440-460 MHz
Electrical 5/8 over 1/2
Gain 4.5 dBd

Model NMO 2/70 (2m/70cm Dual band)

Band 144-148;
442-448 MHz
Electrical 5/8 wave VHF
Collinear UHF
Gain 4 dBd UHF
2.4 dBd VHF

Model NMO 2/70 SH (2m/70cm Dual band)

NMO 2/70 SH K Dual Band, short with cable kit
NMO 2/70 SH Unity, 2m/70cm, coil, spring

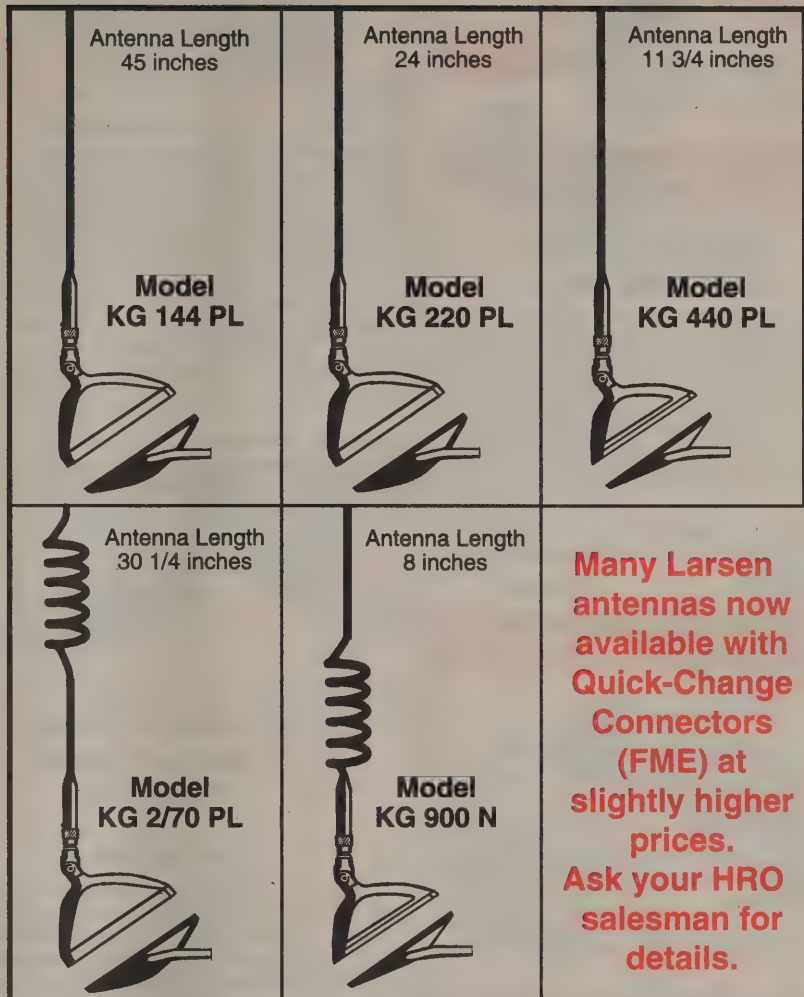
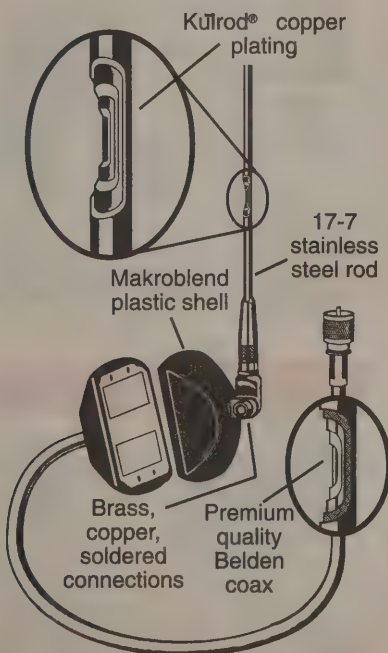


KG Series

Kūlglass® Antennas

Larsen's advanced design techniques in glass-mount antennas result in superior transmit range plus tremendous mechanical durability. Today the glass mount design's performance is nearly identical to rooftop mounts, with no holes to drill. Properly installed on-glass antennas grip for years under demanding conditions, yet are easy to remove and remount.

- Patented low-impedance design is more efficient electrically.
- Greater transmit range.
- Transformer located outside vehicle.
- Copper plated whips emit more RF.
- Rated 50 watts output.
- VSWR at 1.5 to 1 or less.
- Less than .5 dBd loss through glass vs. rooftop.
- New circuit board technology locks in solid state performance.
- 3M's best on-glass adhesive grip.
- 3 year No-Nonsense Warranty™.
- Made in USA.



Many Larsen antennas now available with Quick-Change Connectors (FME) at slightly higher prices. Ask your HRO salesman for details.

Model KG 144 PL (2m)
NEW SOLID STATE COUPLER
 Band 144-160 MHz
 Electrical 1/2 wave
 Gain 2.4 dBd
 Connector PL 259, (Loose)

Model KG 270 PL (Dual)
NEW SOLID STATE COUPLER
 Band 144-148; 440-450 MHz
 Electrical 1/2 wave VHF
 Collinear
 Gain 2.4 dBd VHF; 4.5 UHF
 Connector PL 259, (Loose)

Model KG 220 PL (1.25m)
 Band 220-224 MHz
 Electrical 1/2 wave
 Gain 2.4 dBd
 Connector PL 259, (Loose)

Model KG 900 N (35cm)
 Band 865-965 MHz
 Electrical 5/8 over 1/2 wave
 Gain 2.4 dBd
 Connector N, (Loose)

Model KG 440 PL (70cm)
 Band 440-460 MHz
 Electrical 1/2 wave
 Gain 2.4 dBd
 Connector PL 259, (Loose)

Call Toll-Free to Order a Larsen Antenna

VHF / UHF On Glass

Glassmaster™ Mobile Antennas

Pro-Am's on-glass antennas feature a rugged copper plated whip with black finish and an interior coupler box with adjustable slot to fine tune the SWR. Power rated at 50 watts, they come with 14' of RG58 coax, a PL-259 connector, and mounting package for easy, no hole installation. The dual-band model GM270 covers 2 meters and 440 MHz.

		HRO Price
GM144	144-148 MHz 2 m	\$19.95
GM270	2 m / 70 cm Dual Band	29.95

VHF / UHF Dual-Band

Cover-It-All Dual-Band Antennas

Cover It All with a 19" stainless steel whip antenna. Its 1-1/8" threads match Pro-Am's mounts and 3/4" hole Motorola TAD/TAE mounts. The antenna covers 144-148 MHz and 435-450 MHz with less than 2:1 SWR. Handles up to 150 watts.

		HRO Price
MO144-440	2m / 70cm Dual Band	\$16.95

Magnetic Cover-It-All Dual-Band Antennas

These 2 meter and 70 cm dual band antennas that Cover It All come with magnetic mount kits. The 19" stainless steel whip has a 3" magnetic mount and 12' of RG58 cable with BNC or PL259 connector. Black finish.

		HRO Price
PM144-440 BN	BNC Connector	\$16.95
PM144-440	PL-259 Connector	\$14.95

Mag Mount Antennas

MICRO-MAG™ Mobile Antennas

These ultra trim magnetic mount antennas feature a slender black-chrome whip and small "Candy Kiss" style base that is barely visible on an auto's roof. Only 1-1/8 inches in diameter, the base is fitted with a super strong rare earth magnet that has been wind tested to 110 mph. These Micro-Mags are fully assembled, pretuned, low-profile 1/4 wave whips that are supplied with 9' of RG-174 coax with a BNC connector.

		HRO Price
MM144B	144-148MHz	\$29.95
MM450B	440-450MHz	39.95
MM270B	2m / 70cm Dual Band	39.95



Quarter Wave Magnetic Mount Antennas

Model VAA-002

1/4-wave magnetic mount antenna for 2 meters. Can be cut for 220 or 450 MHz. 17-7 stainless steel whip; 100 watts; complete with 12-foot Valor-Flex™ cable and your choice of a PL-259 or BNC connector.



		HRO Price
VAA-002	PL-259 Connector	\$23.95
VAA-002 BNC	BNC Connector	\$27.95

HF Mobile Antennas

HF Mobile Antennas PHF Series

If you're ready to experience home station performance and great HF DXing on the open road, then gear up with Pro-Am's monoband PHF series mobile antennas and enjoy top results all the way.

Pro-Am's monoband PHF series consists of a black fiberglass lower section with integral coil and an adjustable (and removable) stainless steel whip (except for the PHF160). They are rated at 250 watts PEP and built to withstand considerable use. Standard 3/8x24 threads. Total assembled length on all models 96" (except PHF6 at 58").

Model	Band (meters)	Band Width (kHz)	HRO Price
PHF160	160	12	\$49.95
PHF75	75	36	\$21.95
PHF40	40	60	\$19.95
PHF30	30	100	\$17.95
PHF20	20	150	\$19.95
PHF17	17	175	\$19.95
PHF15	15	200	\$19.95
PHF12	12	300	\$19.95
PHF10	10	500	\$19.95
PHF6	6	1000	\$17.95

Five-Band HF Mobile Antenna Model AB5

Pro-Am's heavy-duty HF mobile slim-line antenna covers 75 m, 40 m, 20 m, 15 m, and 10 m amateur bands. Heavy-gauge copper wire wound on 3/8" fiberglass, with nickel-chrome brass fittings and 17-7 taper ground stainless steel whips assure dependable operation. The 4' whip is field tunable for lowest VSWR and double locked with stainless steel set screws. The 3/8-24 ferrule fits standard mobile mounts. Power rated at 250 watts P.E.P. Approximate 8' length. HRO Price \$109.95

VHF / UHF Mobile Antennas

Premium Series

When You
Want the Best

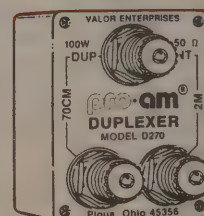
Model	Frequency	Gain	Lgth	Max Power	HRO Price
PR2000	142-148 MHz	3.2 dBd	48.5"	75 W	\$34.95
PR2000C	142-148 MHz	5 dBd	77.5"	150 W	\$44.95
PR2070	140-150 MHz 440-450 MHz	0 dBd 3.2 dBd	17.5"	150 W 100 W	\$35.95

Valor has a series of monoband and dual band professional quality antennas for the ham operator. All models have gold plated center connectors, UHF male connector, and PTFE (TEFLON) insulator.

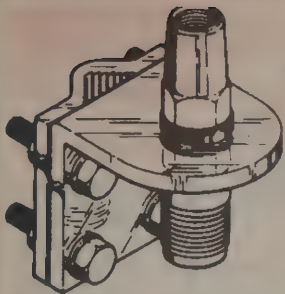
Duplexer

Model D270

Duplexer for two band antennas. Provides cross-band operation with a 2m / 70cm antenna. Power rated up to 100 watts with 50 Ohm impedance. HRO Price \$27.95

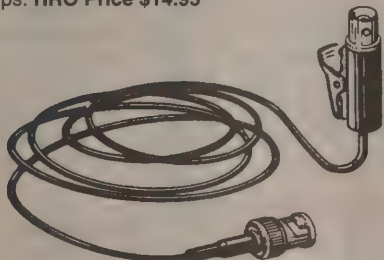


MOBILE MOUNTS



Stainless Mount
Model SSI00AD

Three-way mount installs horizontally, vertically, or flush. Heavy-duty 3/8 SO-239 connector. All stainless steel hardware and chromeplated brass hex. Fits all standard 3/8-24 antennas up to 48". For plug to plug hook-ups. **HRO Price \$14.95**



Hat Clip
Model BNC-HC

BNC Hat Clip with 4' of cable and a BNC connector. **HRO Price \$14.95**



Trunk Lip Mounting Kit
Model PAT2

This low profile, no-hole trunk mount features the Motorola Style 1-1/8"-18 thread for amateurs who demand the very best and professional quality. **HRO Price \$27.95**

Mirror Mount
Model SS100MOT

Stainless steel 3-way mirror mount with a Motorola style mounting. Includes 10' of cable with a PL-259 connector. **HRO Price \$19.95**



Magnetic Mount
Model PAM

A series of low profile magnetic mounts for antennas with Motorola TAD and TAE 1-1/8"x18 threads.

PAM is 3-3/4" with 12' RG58 to PL-259. **HRO Price \$19.95**

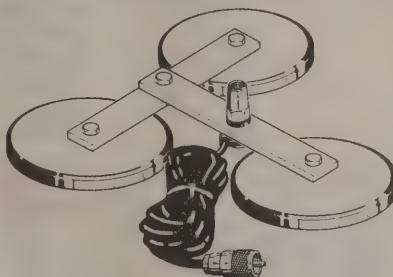
PAM2 is 3-1/4" diameter. **HRO Price \$19.95**

PAM4 is a 5" diameter mount with 17' of RG58 to a PL-259 connector. **HRO Price \$24.95**



Magnetic Mount
Model 401BSO

5" diameter magnetic mount with SO-239 on top. Pre-wired with 12' RG58 to PL-259 connector. Black. **HRO Price \$29.95**



Maxi-Magnet Mount
Model MM3401

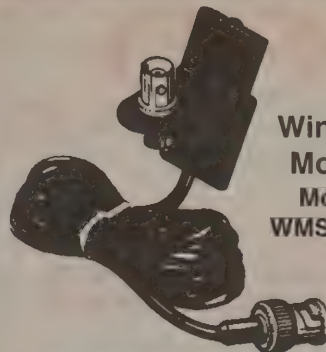
Maxi-Magnet mount kit has three 5" (401) magnets properly spaced on a heavy duty aluminum frame. The MM3401 is pre-wired to Valor's patented wafer termination with 12' of RG58 coax and PL-259 connector. Accepts standard 3/8x24 antennas. **HRO Price \$39.95**

Connector



SO-239 Connector
Model 105AD

Mount Assembly: Heavy duty 3/8 SO-239 Connector, nickel plated. No chance of rust or corrosion. The brass hex is chrome plated. For plug-to-plug connections. **HRO Price \$5.99**



Window Mount
Model WMSLBNC

Slim Line window mount kit with BNC connectors and 7' RG188 cable. Easily mounted to any vehicle window. Features black finish window mount, BNC connectors, and high tech design. Ideal for handheld radios for amateur, CB, scanner and commercial users who need extra performance. **HRO Price \$34.95**

Window Mount
Model MOWM

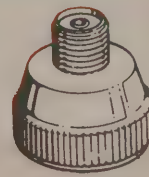


Popular window mount kit with Motorola style fittings. 6' RG58 cable, PL-259 connector. **HRO Price \$18.95**

Adapters



NMO to 3/8x24 Adapter
Model PAN38



NMO to SO239 Adapter
Model PANSO

Need a different mount for your mobile antenna? Use one of these adapters to convert from the mount you have to the one you need.

The **PAN38** converts an NMO to a 3/8x24 mount. **HRO Price \$14.95**

The **PANSO** converts an NMO to an SO239. **HRO Price \$14.95**

MORE ANTENNAS



CLP5130-1

Log Periodic Antennas

The **CLP5130** antennas are high gain, wide band VHF/UHF log periodic beams for horizontally polarized base station use. Use for amateur bands from 50-1300 MHz and FM broadcasting, scanning, VHF / UHF TV, air band communications, government application, and business bands.

The forward gain is 10 to 12 dB—10 to 16 times the gain of a nondirectional discone type antenna. The VSWR is less than 2.0:1 across the band.

The high-quality aluminum antennas have a boom design that allows movement of the phasing line. Distortions in the vertical and horizontal planes are minimized and element adjustment is not necessary. The boom-to-mast bracket is made of a lightweight and rugged magnesium alloy.

	CLP5130-1	CLP5130-2
Frequency	50-1300 MHz	108-1300 MHz
No. Elements	23	19
Power	500W PEP	500W PEP
Forward Gain	10-12 dBi	10-12 dBi
Front/Back	15 db	15 db
Longest element	9' 10"	4' 6"
Boom length	5' 9"	4' 6"
List Price	\$449.95	\$299.95

DIAMOND
ANTENNA

D-130J Super Wideband Discone

Monitor 25-1300 MHz. Transmit on 50, 144, 430, 1200 MHz. All stainless steel. Input power 200 watts. Impedance: 50 ohms. VSWR: 1.5:1. Length: 1.7 meters. Mounts on 1" to 2" masts. **HRO Price \$99.95**



Swiech Communications Systems

Beams for 2 Meters and 1.2 GHz

The **COY2M3EL** is a black anodized, light weight 3 element beam antenna for 2 meters. It provides a 6.1 dB forward gain and an H-plane beam-width of 80 degrees. The bandwidth is 144-148 MHz with an SWR <1.7 at the band edges. Impedance is 50 ohms and it handles 200 watts. A great antenna for packet, public service, camping, T-hunting, Field Day or any portable operation.

	HRO Price
COY2M3EL	\$64.95
COY2M4EL	\$74.95
COY1.2 Beam	\$109.95

The Forbes Group

Ventenna™

Can you spot the antenna?



Neither can your neighbors

At last a solution to antenna restrictions. The Ventenna™ quickly slips over your existing vent pipe and your signal really gets out! It is nearly invisible and is one of the most rugged antennas made. The VT-27 dual-band is for 2 meters and 440 MHz. Single band models are for 2 meters, 220 MHz and 440 MHz.

Model	Description	HRO Price
VT-14	2 meters	\$49.95
VT-22	220 MHz	\$49.95
VT-44	440 MHz	\$49.95
VT-27	2 meter & 440 MHz	\$74.95

KLM

Oscar



2m Circular

Circular polarized models for 2m: **2M-14C** and **2M-22C**. Excellent for Oscar. Circular polarity switch included with each antenna.

440 MHz Circular

Circular polarized models for 440 MHz: **435-18C** and **435-40CX**. Excellent for Oscar. Circular polarity switch included with each antenna.

Fiberglass Masts

To provide proper horizontal boom insulation for OSCAR operation, KLM has two fiberglass masts: one 5 feet; the other 7.5 feet. Care should be taken in selecting the elevation rotator. The masts are too large for the Alliance U110 which is sometimes used. The masts will work with the Yaesu rotators.

VHF / UHF Beams

2-Meter Beams

Models 2M-16LBXM, 2M-11, 2M-4X.

440 MHz Beams

Models 432-16BA, 432-30LBX, 440-14, & 440-6.

Duplexers

When using a single antenna with mobile radios that have separate 2 meter and 440 MHz outputs, it is necessary to use a duplexer. Also see pages 91 and 103.

Larsen's AD-2 / 70 duplexer provides a bi-directional passive coupler. Isolation between VHF and UHF is more than 50 dB. Handles 200 watts. **HRO Price \$63.70**

Yaesu's AD-3 handles up to 50 watts and comes with short cables to attach to the radio. The VHF cable has an SO-239 and the UHF has a type N connector. VHF to UHF isolation is 50 dB. **HRO Price \$52.95**

Rubber Duckies

Larsen



Larsen offers several models of "rubber duck" antennas, each with its own special performance characteristics.

Helical

Helical antennas, approximately 6" in length, are the most commonly used.

HQ Helical

The HQ is a helical quarter wave antenna that offers a higher gain than the normal helical. This antenna is offered only for VHF applications.

HW Half Wave

Available for both VHF and UHF, the 1/2-wave allows operation independently of the ground plane. It has a rigid impedance transformer at the base and a chrome-plated telescoping, black whip with a BNC connector. **Call for prices.**

DIAMOND ANTENNA

Mobile Antenna System Model MV3A

MV3A has 4 band capability: 2m, 6m, plus two HF bands through use of loading coils.

Bands Supplied: 10m / 6m / 2m
Opt. Loading Coils: 40m/20m/17m/15m
Power, P.E.P.: HF 120w / VHF 200w
Mount Connection: UHF
Length: 57"
SWR: 1.5:1 nominal
MV3A Price: \$84.95

Antenna mounts recommended:
K400C or K600M
(see next page)

**MX62M
Duplexer**
\$77.95

- Specifications:
- HF / 6m & 2m duplexer.
 - 1.6-56 MHz LPF
 - 76-470 MHz HPF
 - (76-120 receive only)
 - Watts: 600 P.E.P.
 - Loss: .2 dB LPF
 - .3 dB HPF
 - Isolation: 50 dB

Use with HF / VHF mobile Transceivers such as the IC706, or combine 2m and HF rigs.

Optional Loading Coils

HVC7	40m	\$39.95
HVC14	20m	\$39.95
HVC18	17m	\$39.95
HVC21	15m	\$29.95

Antennas for Handhelds

RH3 / SRH805 **NEW!** SMA

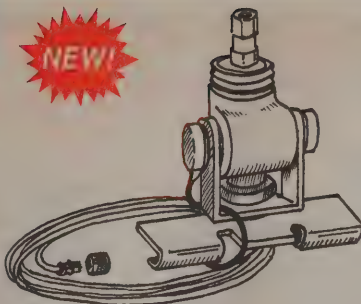
RH77CA

RH951S **NEW!**

RH707

RH205

SRH519 / SRH815 **NEW!** SMA



K400-3/8C Special Trunk Mount for 3/8 x 24 thread Antennas

Here's the ideal mounting system for Outbacker Perth, OB Jr., and other medium weight antennas. A spring is recommended for stiff or heavy antennas.

Power: 350 watts RMS
Cable: 6 1/2' RG316 teflon coax
Connector: PL-259
Adjustment: 2 axis

K400-3/8C \$69.95
Note: Use C110, 10 ft extension for front radio installation. \$14.95

Diamond Accessories

Model	Description	HRO Price
CX-210A	Heavy duty wideband coax switch, DC-1000 MHz. 1.5 kW, SO-239 connector.	\$51.95
CX-210N	Heavy duty wideband coax switch, DC-1500 MHz. 1.5 kW, N connector.	\$93.95
DL-30A	Dummy load. DC-500 MHz, 15W RMS (max)/100w peak. PL-259 connector.	\$49.95
HB-100	Desktop mounting bracket for handheld transceivers	\$44.95
HB-400	HT transceiver dash mount. Clamps to air conditioning louvers	\$19.95

Diamond Handheld and Receiving Antennas

Model	Description	HRO Price
D-130J	Wideband discone 25-1300 MHz. 200 W transmit 50-1300 MHz. No cable.	\$99.95
RH-3	2m / 70cm dual-band HT antenna. 1.75" BNC. 120-900 MHz receive.	\$34.95
RH-77CA	High gain 2m / 70cm dual-band HT antenna. Receive range to 900 MHz. BNC.	\$34.95
RH-205	2m HT antenna, telescopic, 5/8 fully extended, 47.5"; 1/4 retracted, 9".	\$27.95
RH-519	2m / 70cm slim dual-band HT antenna. Flexible. 8" BNC, 10 watts.	\$34.95
RH-707	2m / 70cm dual-band, tiltable whip HT antenna. 8-1/4" BNC.	\$37.95
RH-951S	High gain 2m/70cm/23cm slim tri-band HT antenna. Flexible. BNC (Wide band receive)	\$52.95
SRH-519	2m / 70cm slim dual-band HT antenna. Flexible. 8" SMA, 10 watts.	\$34.95
SRH-805	2m / 70cm / 23cm tri-band HT antenna. 1.75" SMA, 10 watts.	\$29.95
SRH-815	2m / 70cm / 23cm tri-band HT antenna. Flexible. 6" SMA, 10 watts.	\$40.95

NEW PRODUCTS

Hide-Away Antenna Mount Model K601

As easy as 1-2-3 the K601 Hide-Away Mount folds your mobile antenna safely into the car trunk. Fully adjustable, it fits most vehicles.

Color: Black.
Power Rating: 350 W RMS; 500 W P.E.P.
Cable: 6 1/2' RG316 teflon coax w / PL-259.
Recommended antennas: NR73BNMO, NR770HNMO, NR770HBNMO, SG7200NMO, NR770H, NR770HB, NR770RA & SG7500A.

K601M	UHF Base	\$69.95
K601NMO	NMO Base	\$69.95
C110, 10 ft extension		\$14.95



Now you don't!

The Standard by Which All Others are Judged

- Wide-band performance
- Highest gain
- Fiberglass radome
- Factory adjusted
- DC grounded
- UPS shippable
- High wind rating
- Stainless hardware

Diamond Base Station Antennas

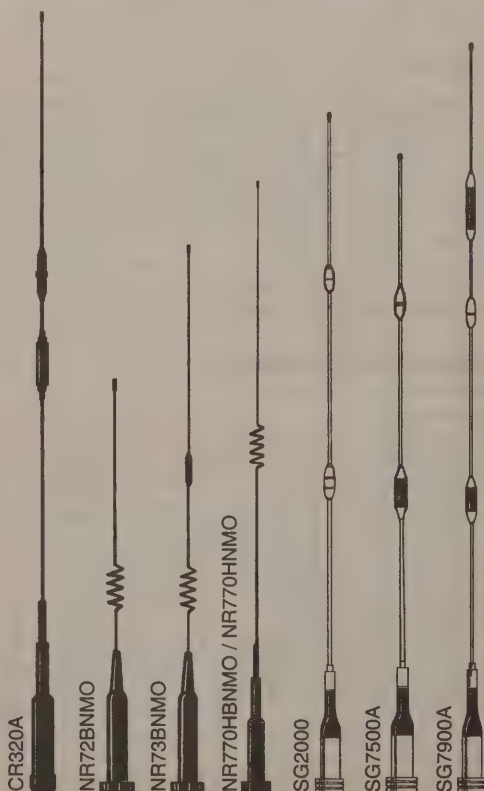
Model	Bands	Gain, dB	Watts	Conn.	WT (lbs)	Lth (ft)	MPH	Fig	HRO Price
DP-GH62	6m	6	200	UHF	7	21	78	B	\$149.95
F-22A	2 m	6.7	200	UHF	5	10.5	112	B	\$109.95
F-23A	2 m	7.8	200	UHF	8	15	90	A	\$159.95
F-142A	1 1/4 m	5.5	200	UHF	2	6	110	C	\$124.95
F-718A*	70 cm	11.5	250	N	5	15	90	A	\$229.95
F-1230A	23 cm	13.5	100	N	5	10.5	90	B	\$159.95
U300A	70 cm/23 cm	8.6/13.2	100	N	4	8.3	110	C	\$159.95
U5000	2m/70/23cm	4.5/8.3/11.7	150	N	3	6	135	C	\$149.95
V2000A	6m/2m/70cm	2.1/6.2/8.4	150	UHF	4	8.3	110	B	\$149.95
X-50A	2 m/70 cm	4.5/7.2	200	UHF	3	5.6	135	C	\$114.95
X-200A	2 m/70 cm	6.0/8.0	200	UHF	4	8.3	112	B	\$149.95
X-300A	2 m/70 cm	6.5/9.0	200	UHF	4	10.5	90	B	\$169.95
X-510NA	2 m/70 cm	8.3/11.7	200	N	5	17.2	90	A	\$199.95
X-510MA	2 m/70 cm	8.3/11.7	200	UHF	5	17.2	90	A	\$199.95
X-500HNA	2 m/70 cm	8.3/11.7	200	N	7	17.8	90+	A	\$249.95
X-700HNA	2 m/70 cm	9.3/13.0	200	N	12	24	90	-	\$399.95
X-2200	2 m/1 1/4 m	6.0/7.8	200	UHF	4	10.6	112	B	\$169.95
X-3200A#	2m/1 1/4m/70cm	6.0/7.8/8.0	100@	UHF	4	10	112	B	\$219.95
X-6000A	2m/70/23cm	6.5/9.0/10.0	100	N	5	10	112	B	\$199.95

All base antennas grounded for lightning protection #2m: 146-148 MHz

Factory adjusted for American Amateur Bands - No tuning required

* F-718A -- 440-450; F718J -- 430-440; F718L -- 420-430

@ 100 wwatts on 2m, 200 watts on 1 1/4m and 70cm



Diamond Mobile Antennas

Model	Bands	Gain/dB	Watts	Mount	Lth/in	HRO Price
NR-124	23 cm	8.4	100	N	25	\$66.95
NR-140A	1 -1/4 m	4	150	UHF	37	\$60.95
SG2000	2 m	5.2	150	UHF	62	\$89.95
CR-214S*	2 m/1 -1/4 m	2.1/3.4	150	UHF	37	\$62.95
CR-224A	2 m/1 -1/4 m	5.0/6.0	200	UHF	68	\$99.95
CR-320A#*	2 m/1 -1/4 m/70cm	2.1/3.8/5.5	100@	UHF	36	\$98.95
CR-627B#*	6m/2m/70cm	2.1/4.5/7.2	150	UHF	60	\$99.95
CR-627BNMO#*	6m/2m/70cm	2.1/4.5/7.2	150	NMO	60	\$99.95
NR-72BNMO#*	2 m/70 cm	2.1/2.1	100	NMO	14	\$46.95
NR-73BNMO#	2 m/70 cm	2.1/5.3	100	NMO	33	\$62.95
NR-770HA	2 m/70 cm	3.0/5.5	200	UHF	40	\$62.95
NR-770HNMO	2 m/70 cm	3.0/5.5	200	NMO	41	\$64.95
NR-770R	2 m/70 cm	3.0/5.5	200	UHF	39	\$59.95
NR-770SA*	2 m/70 cm	2.1/2.1	100	UHF	17	\$41.95
NR-770HB#	2 m/70 cm	3.0/5.5	200	UHF	40	\$64.95
NR-770HBNMO#	2 m/70 cm	3.0/5.5	200	NMO	41	\$66.95
NR-790A	2 m/70 cm	4.5/7.2	120	UHF	58	\$94.95
NR-2000NA	2 m/70/23 cm	3.1/6.3/9.7	100	N	39	\$92.95
SG6000NMO*	6 m	2.15	150	NMO	39	\$84.95
SG7000*	2 m/70 cm	2.1/3.8	100	UHF	18	\$73.95
SG7200NMO	2 m/70 cm	3.2/5.7	150	NMO	38	\$88.95
SG7500	2 m/70 cm	3.5/6.0	150	UHF	41	\$86.95
SG7500NMO	2 m/70 cm	3.5/6.0	150	NMO	42	\$88.95
SG7900	2 m/70 cm	5.0/7.6	150	UHF	62	\$109.95
TG-509	2 m/70 cm	2.1/5.5	50	Glass	34	\$179.95

Factory adjusted for American amateur bands, no tuning required.

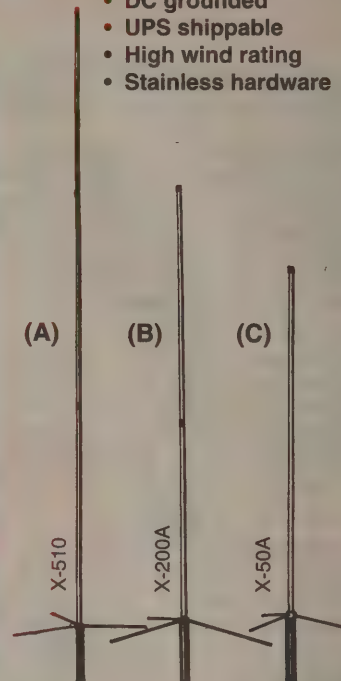
SG and NR antennas require no ground system.

Mobile antennas have foldover feature with spring loaded hinge (except NR770SA, NR72BNMO, NR73BNMO).

Magnetic mount not recommended for antennas over 45".

Black Anodized finish @ 100 watts on 1-1/4m, 200 watts on 2m and 70cm.

* Magnetic Mounts not recommended. Vehicle Ground required



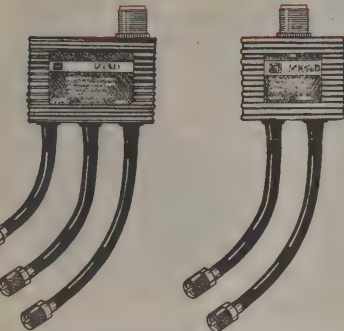
ANTENNAS & ACCESSORIES

Frequencies

Band	Frequency
6 m	50 - 54 MHz
2 m	144 - 148 MHz
1-1/4 m	222 - 225 MHz
70 cm	440 - 450 MHz
23 cm	1240 - 1300 MHz

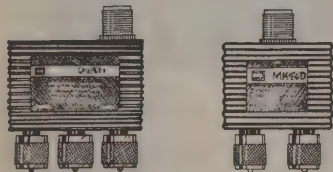
Diamond Duplexers and Triplexers

Model	Port	Freq MHz	CW Watts	PEP Watts	Loss dB	Isol dB	MIX Conn.	Port Conn.	HRO Price
MX-37	LPF HPF	1.6 - 470 900 - 1300	100 50		.25 .25	45 45	N-Jack (F)	UHF-Male/12" cable N-Male/12" cable	\$74.95
MX62M	LPF HPF	1.6 - 56 76 - 470		600 600	.3 .3	50 50	SO-239	PL-259/12" cable PL-259/12" cable	\$77.95
MX-72D	LPF HPF	1.6-30 140 150 440- 460	400 150 100	1KW 400 250	.1 .1 .2	60 60 60	SO-239	PL-259/no cable PL-259/no cable	\$52.95
MX-72DN	LPF HPF	1.6-30 140 150 440- 460	400 150 100	1KW 400 250	.1 .1 .2	60 60 60	SO-239	PL-259/no cable N-Plug/no cable	\$52.95
MX-72H	LPF HPF	1.6-30 140 150 440- 460	400 150 100	1KW 400 250	.1 .1 .2	60 60 60	SO-239	PL-259/12" cable PL-259/12" cable	\$58.95
MX-72N	LPF HPF	1.6-30 140 150 440- 460	400 150 100	1KW 400 250	.1 .1 .1	60 60 60	SO-239	PL-259/12" cable N-Male/12" cable	\$58.95
MX-214	LPF HPF	140-150 220-225	150 100	400 250	.3 .4	45 45	SO-239	PL-259/12" cable PL-259/12" cable	\$73.95
MX-214D	LPF HPF	140-150 220-225	150 100	400 250	.3 .4	45 45	SO-239	PL-259 no cable PL-259/no cable	\$89.95
MX-324	LPF BPF HPF	1.6-60 220 225 400- 550		800 600 500	.3 .4 .4	40 40 40	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$99.95
MX-324D	LPF BPF HPF	1.6-60 220 225 400- 550		800 600 500	.3 .4 .4	40 40 40	SO-239	PL-259 no cable PL-259/no cable PL-259/no cable	\$99.95
MX-2000	LPF BPF HPF	1.6-60 110 170 300- 950		800 800 500	.15 .20 .25	60 60 60	SO-239	PL-259/12" cable PL-259/12" cable PL-259/12" cable	\$94.95
MX-2000D	LPF BPF HPF	1.6-60 110 170 300- 950		800 800 500	.15 .20 .25	60 60 60	SO-239	PL-259/No cable PL-259/No cable PL-259/No cable	\$99.95
MX-3000	LPF BPF HPF	1.6-160 350-500 850-1300		800 400 200	.15 .25 .30	55 55 55	N-Jack(F)	PL-259/12" cable PL-259/12" cable N-male/12" cable	\$94.95
MX-3000D	LPF BPF HPF	1.6-160 350-500 850-1300		800 400 200	.15 .25 .30	55 55 55	N-Jack(F)	PL-259/No cable PL-259/No cable N-male/No cable	\$89.95
MX-3000N	LPF BPF HPF	1.6-160 350-500 850-1300		800 400 200	.20 .30 .40	55 55 55	N-Jack(F)	PL-259/12" cable N-Male/12" cable N-male/12" cable	\$94.95



MX324
MX-2000
MX-3000
MX-3000N

MX-37
MX-72H
MX-72N
MX-214



MX-324D
MX-2000D
MX-3000D

MX-72D
MX-72DN
MX-214D

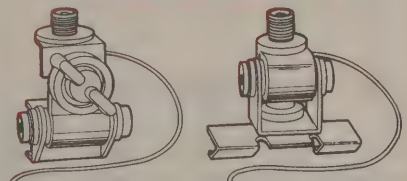
Diamond Mobile Mounts

Model	Description	HRO Price
C101	UHF base 6.5' RG316 Teflon coax w/PL259	\$29.95
C110	10' mini-8/RG8X cable extension for front radio installation	\$14.95
C211	Combination of C101 and C110. 16.5 feet cable assembly	\$39.95
DPK-4NM-N	Type N on Magnet. Similar to DP- SPM/5D. N-Plug. Good to 1300 MHz.	\$49.95
K200KM	Black Trunk/Hatchback mount with fold over feature. 16.5 feet RG-58A/U w/PL-259	\$49.95
K300C	Deluxe rain gutter mount. Black, Adjustable position. 10 feet RG316 Teflon Coax w/PL259	\$69.95
K300KM	Deluxe rain gutter mount. Black, adjustable position. 16.5' RG-58A/U w/PL-259	\$79.95
K400-3/8C *	Special mount for 3/8X24 thread Antenna. 6.5 feet RG316 w/PL-259	\$69.95
K400C *	Deluxe mount with UHF type base. 6.5 feet RG-316 Teflon coax w/PL-259	\$79.95
K400N *	Deluxe mount with type-N base. 13.5 feet RG316 Teflon coax w/type-N connector	\$89.95
K400NMO	Deluxe mount with NMO type base. 6.5 feet RG316 Teflon coax w/PL-259	\$67.95
K540KM	Deluxe Mirror/Luggage rack mount. Black, adjustable. 16.5' RG58A/U w PL259	\$67.95
K550KM	Deluxe mini van luggage rack mount. Black, adjustable. 16.5' RG58A/U w PL259	\$69.95
K600M	Tilt angle (0-9 degrees) trunk mount. Black. RG-188 and low loss 5 mm cable.	\$69.95
K601M *	UHF hideaway trunk mount. 6.5 feet RG316 Teflon coax w/PL-259	\$69.95
K601NMO	NMO hideaway trunk mount. 6.5 feet RG316 Teflon coax w/PL-259	\$69.95
NMO/UHF	Adapter for imported antennas PL-259 to Motorola NMO base. Max 45" antenna	\$23.95
SPM35	UHF type base on heavy 1.5 lb/4" magnetic, 13' 5mm coax/PL-259.	\$44.95

* Use C110, 10' cable extension for front radio installations

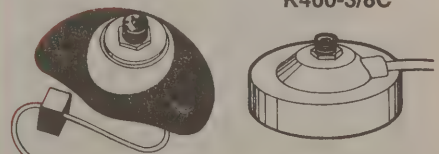
Connector Types

Type	Description
UHF	SO-239/PL-259
NMO	Motorola Type



K300C /
K300KM

K400C
K400CNMO
K400N
K400-3/8C

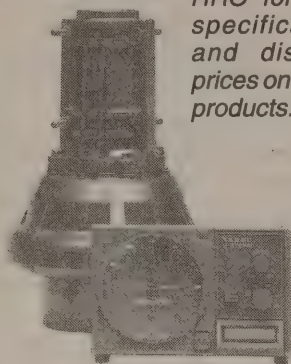


K600M

SPM35
DPK-4NM-M

Yaesu's high quality rotators for amateurs include models for medium to large arrays and for satellite work. There are also provisions for computer control. Contact your nearest

HRO for more specifications and discount prices on Yaesu products.



G-2800SDX

The G-2800SDX is a high-technology rotator designed to turn the largest tower-mounted antenna arrays.

G-800S / G-800SDX

The G-800 rotator series is designed for medium to heavy loads and antennas up to 20 square feet. The G-800SDX is the same as the G-800S with the addition of presets.

G-1000SDX

The G-1000SDX is designed to handle bigger arrays, up to 22 square feet. A great value.

Rotator Computer Controllers

The GS-23 Rotator Computer Controller is for the G-800SDX, G-1000SDX and G-2800SDX. Suggested List Price GS-23 \$345.95

The GS-232 model is for the G-5400. Suggested List Price GS-232 \$547.95

G-450XL

The G-450XL is ideal for smaller HF and VHF/UHF antennas. Features 360 degree radial compass display with overlap. A slight modification required for 220V operation.



Call for HRO Discount Prices

G-5400B

This is the most popular azimuth and elevation rotator for satellite, moonbounce or other space communications work. It combines the G400 and G500 rotators to provide both horizontal and vertical antenna rotation in a single unit. The control box has two large meters, one showing elevation and the other azimuth. Meter aiming accuracy is within $\pm 4\%$. The G-5400B provides for full 180° elevation rotation with a rotation time of 58 seconds. A full 360° azimuth rotation can be achieved in just 50 seconds. This rotator accepts up to a 2.5" mast, a maximum 1-5/8" horizontal cross-boom and 440 pounds of vertical load.

Suggested List Price \$629.95

G-500A

This is an elevation rotator for satellite work. The control box shows elevation in degrees.

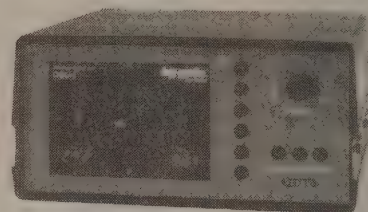
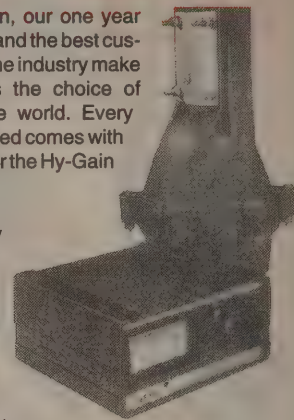
Rotator Separation Kit

For some applications it is desirable to separate the azimuth from the elevation rotator on the tower. This separation kit provides all the hardware for the rotator to implement this separation. HRO Price \$30.95

hy-gain by Telex

Reliable operation, our one year limited warranty, and the best customer service in the industry make Hy-Gain rotators the choice of hams around the world. Every tower manufactured comes with mounting holes for the Hy-Gain bolt pattern.

The heavy duty HDR-300A has a control cable connector and a stainless steel shaft. It gives you a choice of North or South centering orientation.



Pathfinder DCU-1 Digital Control System

Hy-Gain's DCU-1 Pathfinder is the first all-digital rotator control box made in the USA. With six heading presets, automatic break delay and computer compatibility, the DCU-1 Pathfinder establishes a new standard for rotator systems.

Digital and analog displays help you preprogram your favorite beam headings. The main ROTATE knob sets the target bearing within 1 degree. An all-in-one RS-232 computer interface unit and simple Basic program is included. Features motor slow down, automatic calibration, and programmable center of rotation. The DCU-1 may be paired with the T2X, HAMIV or HAMV. Suggested List \$607.95

Rotator Specifications

	Model	Input Voltage	Motor Voltage	Rotation Time	Stationary Torque	Rotation Torque	Maximum Windload	Max. Vert Load	Max. Mast Size	Cable Type	Weight lbs (kg)	Sugg. List
Hy-Gain	HDR-300A	110/220 V	24 VAC	60 sec	7500 in lbs	5000 in lbs	25 sq ft	500 lbs	3 in	7-wire	55 (25)	\$1,198.95
	T2X#	110 V *	24 VAC	60 sec	9000 in lbs	1000 in lbs	20 sq ft	800 lbs	2.06 in	8-wire	28 (12.7)	\$613.95
	HAM-IV#	110 V *	24 VAC	60 sec	5000 in lbs	800 in lbs	15 sq ft	500 lbs	2.06 in	8-wire	24 (11)	\$515.95
	HAM-V#	110 V *	24 VAC	60 sec	5000 in lbs	800 in lbs	15 sq ft	500 lbs	2.06 in	8-wire	24 (11)	\$881.95
	CD-45II	110 V	24 VAC	60 sec	800 in lbs	600 in lbs	8.5 sq ft	200 lbs	2.06 in	8-wire	22 (10)	\$319.95
M2	AR-40	110 V	24 VAC	60 sec	450 in lbs	350 in lbs	3 sq ft	100 lbs	2.06 in	5-wire	14 (6.4)	\$260.95
	OR-2800	110/220 VAC	28 VAC	70 sec	17,000 in lbs	2500 in lbs	35 sq ft	1800 lbs	3 in	8-wire	28.5 (13)	\$1,299.95
	G-450XL	110 V	24 VAC	51 sec	217 ft lbs	39.8 ft lbs	10 sq ft	242 lbs	2 in	5-wire	7 (3.2)	\$269.95
	G-800S	110 VAC	24 VAC	55 sec	3456 in lbs	43-79 ft lbs	17 sq ft	440 lbs	2.5 in	6-wire	10 (4.5)	\$399.95
	G-800SDX	110 VAC	24 VAC	55 sec	3456 in lbs	43-79 ft lbs	17 sq ft	440 lbs	2.5 in	6-wire	10 (4.5)	\$499.95
Yaesu	G-1000SDX	110 VAC	24 VAC	55 sec	5200 in lbs	79 ft lbs	22 sq ft	440 lbs	2.5 in	6-wire	15 (6.8)	\$609.95
	G-2800SDX	110 VAC	24 VAC	55 sec	20,832 in lbs	219 ft lbs	34 sq ft	880 lbs	2.5 in	6-wire	26(11.8)	\$1,099.95
	G-500A	110 VAC	24 VAC	61 sec	1740 in lbs	876 in lbs	11 sq ft		1.5 in	6-wire	5.5 (2.5)	\$309.95

* 220 VAC models are available at additional costs #Difital versions available. Call for quotes

M²

OR-2800 Rotator



The Orion OR-2800 is engineered for long life, reliability and performance while turning large antennas or systems. It has a strong ductile iron mast clamp to supports up to 3" masts, extended and hardened drive shaft, and prop-pitch style torque plate. The rotator housing fits inside most popular towers and mates to standard tower / rotator plates.

The RC2800 Control Box features digital readout, variable speed control, slow start, and reverse delay. The RC2800P adds programmability, pre-set, 2 rotator capacity, coast-down, true AZ read-out-continuous and infinite limit position control.

The OR-2800 carries a 1 year warranty is made in the U.S.A. **Suggested List \$1299.95**

Wind Area Capacity	35 sq. ft.
Starting Torque	3500 in. lbs.
Rotating Torque	2500 in. lbs.
Breaking Torque	17000 in. lbs.
Vertical Load Capacity	1800 lbs.
Mast Size (O.D.)	1.75-3"
Rotational Speed (360)	70-140 sec.
Readout Accuracy	1 degree
Input Voltage	110/220 AC 50/60 Hz
Motor Voltage	28 VAC
Cable Type	8 conductor
Weight (Rotator unit)	28.5 lbs.

Rotator Cable

Belden

HRO carries two **Belden rotator cables**. Use standard duty cable for runs up to 100 feet. For longer runs, please use heavy duty cable. Remember, Belden quality is **tops** in the industry

8 wire, standard duty - Model 8448 - 8 wire cable using 6 - #22 and 2 - #18 tinned copper conductors. PVC insulation; chrome PVC jacket.

8 wire, heavy duty - Model 9405 - 8 wire cable using 6 - #18 m and 2 - #16 tinned copper conductors. PVC insulation; chrome PVC jacket.

When Ordering Cable

Please order the cable in multiples of 50 feet. Lengths up to 1000 feet in a continuous spool can be provided. **Call toll free for quotes.**

Connectors

Connect Works

Model	Description	HRO Price
B-112XC	BNC for RG-8/X Gold Pin	\$3.99
BU-312	BNC to UHF Adaptr (BNC-255)	\$5.99
NU-312	N to UHF Adaptr (4400)	\$9.99
SB-312	SMA to BNC Adaptr	\$9.99
U-245C	4 hole SO-239 Chassis Connector	\$1.99
U-311	Double Male UHF (83-877)	\$6.99
U-322	UHF Barrel (83-1J)	\$4.99
U-332	Long UHF-UHF Barrel (83-1F)	\$6.99
U-412	RT. Angle Teflon, Gold Pin (83-1AP)	\$8.99
U-512C	UHF "T" (83-1T)	\$6.99
UB-312	BNC to UHF Adaptr (31-28)	\$6.99
UN-312	UHF to N Adptr (14000)	\$15.99

Antenna Rope

synthetic textiles

Black Dacron® Polyester

This antenna rope is constructed of strong, double braid Dacron® polyester. It is black for UV protection and has excellent resistance to mildew and abrasion. The rope ties and cuts easily, sealing effectively with a hot knife. No expensive hardware is required. Sizes and prices are shown below.

Size Model	Strength	HRO Price *
3/32"		
ST-3/32-100	260+ lbs	\$9.95
3/16"		
ST-3/16-100	770+ lbs	\$14.95
5/16"		
ST-5/16-100	1790+ lbs	\$19.95

* Price per 100 feet

The OWL



Want to keep those birds off your antenna system? The OWL is just the trick.

Mount this fella on top of your tower and the birds will stay away.

HRO Price \$19.95

Coax

Belden

Call for Belden Quotes

Coax can be purchased in any length up to 1000 feet. 1000' continuous lengths of 9913 or 8214 must be sent by truck.

8214 - RG8 / U

8214 is a standard RG8 / U, #13 stranded copper center conductor, cellular polyethylene insulation, 97% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 1.8 dB loss per 100' at 100 MHz. The most popular cable for HF and VHF / UHF. Use when long cable runs are not required.

RG213 / U

RG-213 / U coax, #13 stranded copper center conductor, solid polyethylene insulation, 97% bare copper shield, non-contaminating PVC jacket, 50 ohm impedance, 66% velocity factor and 2.2 dB loss per 100' at 100 MHz. This RG-8 type cable is best for HF use. It may be buried.

9913/9913F

9913 is RG8-type coax, #9.5 solid copper conductor, semi-solid polyethylene insulation, 100% foil plus 88% braid shield, PVC jacket, 50 ohm impedance, 84% velocity factor and 1.4 dB loss per 100' at 100 MHz. The best cable for VHF and UHF applications. Use **9913F** for more flexible runs.

9258 - RG8X

RG8X is small diameter coax, #16 stranded copper center conductor, cellular polyethylene insulation, 95% bare copper shield, PVC jacket, 50 ohm impedance, 78% velocity factor and 3.7 dB loss per 100' at 100 MHz. Good for short VHF runs and most HF uses.

9356 - RG8 / U

100' roll of 8214 RG8 / U coax with PL-259 connectors (crimp type) installed on each end for your convenience.

8000

14 strand "copper weld" bare copper wire. Great for long wires or dipole. High tensile strength.

COAX-SEAL



Coax-Seal will seal all types of coax fittings, baluns, antenna parts and connectors of any shape. Adheres to most surfaces. Wrap Coax-Seal around the object you want to protect and then mold it into shape. Keeps moisture out of the coax fitting on antenna feed lines. Need to make a change? Just remove it and start over.

MA-SERIES CRANK-UP MASTS

The premier MA-Series crank-up Tubular Towers are designed to be both safe and neighbor friendly. The slender design gives a Clean, flagpole-like appearance, while allowing for antennas up to 10 sq. feet in 50 mph winds. Per EIA Specifications, adequate safety margins are included. Uniform Building Code calculations are available for most models.

The MA-40 and 550 models come standard with flat base. two 1/2" x 10" anchor bolts, wall bracket and rotor plate mounted on top of top section. No guying is required when tower is properly bracketed to the eve of your roof.

MA-Series towers are completely self-supporting only when used with accessory MARB or MAB Series bases. The MARB Series rotor base allows the entire tower and antenna to be rotated from the base (rotor not included). This provides for easy rotor maintenance plus emergency hand rotation of the entire tower and antenna.

The MA-550MDP, 770MDP and 850MDP models include a heavy duty motor drive with positive pull down. The MDP models provide motorized raising and lowering of the tower. A remote control unit (RMC-1000) accessory is available that allows raising and lowering from your ham shack or other remote location.

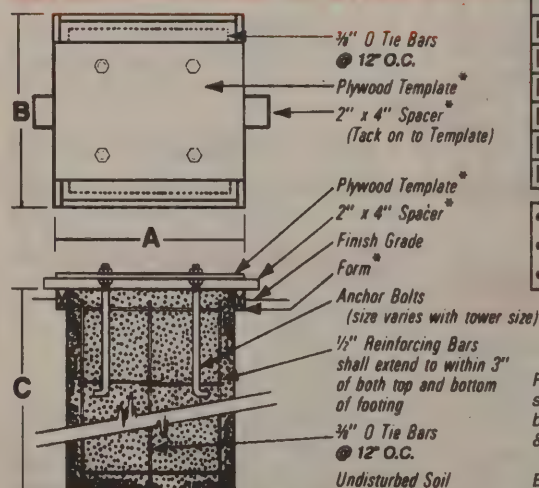
All models without motor drives come standard with manual hand winches which have load actuated brakes for maximum safety. This feature prevents the winch from free-wheeling and causing injury to you or your installation in the event that you loose your grip during raising or lowering.

All steel used at US Tower conforms to ASTM specifications. All welding is done by certified factory personnel. All of our towers are factory tested by trained personnel before leaving the plant.

Model Number	Height Maximum	Height Minimum	Sections	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
MA-40	40'	21'6"	2	242	3" sq.	4.5"	\$679.95
MA-550	55'	22'1"	3	435	3" sq.	6.625"	\$1,069.95
MA-550MDP	55'	22'1"	3	620	3" sq.	6.625"	\$2,619.95
MA-770	75'	22'10"	4	645	3" sq.	8.0"	\$2,259.95
MA-770MDP	75'	22'10"	4	830	3" sq.	8.0"	\$3,579.95
MA-850MDP	90'	23'6"	5	1128	3" sq.	10.0"	\$4,819.95

All Towers will handle 10 sq. ft antenna at 50 MPH winds.

MA-SERIES BASE INFORMATION



*To be removed after base is installed.

Model	A	B	C	HRO Price
MA-40 standard flat base	16"	16"	16"	CALL
MA-550 standard flat base	20"	20"	20"	CALL
MARB-40 Rotor Base	3'	3'	4'	\$499.95
MARB-550 Rotor Base	3'	3'	5'6"	\$579.95
MARB-770 Rotor Base	3'	3'	6'6"	\$689.95
MARB-850 Rotor Base	4'	4'	6'6"	\$819.95

- Base dimensions may vary with different soil composition
- Allow ample time for concrete to cure
- MAB and MARB dimensions are the same.

Rebar is not provided by US Tower. MA-40 & 550 use their standard base as a template. These standard bases use only 2 bolts and require no rebar. Wooden template included with MAB & MARB bases.

Because of wide variations throughout the country in zoning requirements and loading conditions (snow, wind, ice, etc.), it is the responsibility of the customer to make Certain that his Tower conforms to all applicable codes. We recommend you obtain all necessary permits prior to purchase.

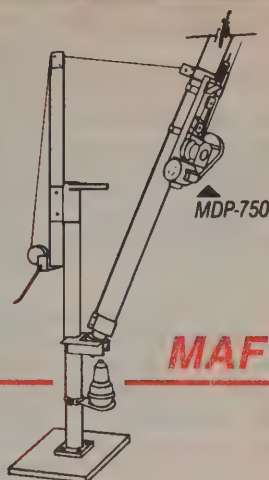


The factory reserves the right to make changes or modifications without notice.

MA-SERIES ACCESSORIES

Model	Description	Weight
MAF Raising Fixture		
<i>MAF-Series Raising Fixture accessory for easy raising and antenna servicing. For use with MARB and MAB bases.</i>		
MAF-40	Raising fixture for MA-40	35#
MAF-550	Raising fixture for MA-550	70#
MAF-770	Raising fixture for MA-770	75#
MAF-850	Raising fixture for MA-850	80#

The Customer is Responsible
for obtaining all local city or county building and tower permits
AND
for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.



MAF

MARB Freestanding Rotator Base

MARB-40	Freestanding rotator base for MA-40 with four 3/4" x 27" anchor bolts and thrust bearing	75#
MARB-550	Freestanding rotator base for MA-550 with four 1" x 36" anchor bolts and thrust bearing	140#
MARB-770	Freestanding rotator base for MA-770 with four 1" x 36" anchor bolts and thrust bearing	195#
MARB-850	Freestanding rotator base for MA-850 with four 1-1/8" x 36" anchor bolts and thrust bearing	280#



MARB

MAB Freestanding Type Base

MAB-40	Freestanding hinged base for MA-40 with four 3/4" x 27" anchor bolts	55#
MAB-550	Freestanding hinged base for MA-550 with four 1" x 36" anchor bolts	119#
MAB-770	Freestanding hinged base for MA-770 with four 1" x 36" anchor bolts	175#
MAB-850	Freestanding hinged base for MA-850 with four 1-1/8" x 36" anchor bolts	180#



Hinging allows for easy installation on both MAB and MARB Bases.

MAB

Coax Standoff Arms

CX-2M	Coax standoff arms for MA-40	4#
CX-3M	Coax standoff arms for MA-550	6#
CX-4M	Coax standoff arms for MA-770	8#
CX-5M	Coax standoff arms for MA-850	10#
IV-16	The IV-16 slips over the top of the mast and rests at the top of the tower to hold inverted vee antennas. The IV-16 cannot be used with the MARB rotator base.	5#

Model	Description	Weight
Motor Drives		
MD-75	Heavy-duty motor drive with one HP motor and gear box.	155#
MDP-750	Heavy-duty motor drive with one HP motor, gear box, and positive pull down.	185#

Remote Control Accessories

RMC-1000	Relay operated remote control for raising and lowering your tower from your ham shack or other remote location.	18#
MCL-100	Limit switch control package includes limit switches, limit switch brackets, and control box at the base of the tower.	7#

**Call Toll-Free for Discounts on
U.S. Towers and Accessories**

TMM SERIES

US Tower's latest design includes the compact TMM Series towers giving Hams in restricted areas an alternative. The TMM Series has a minimum retracted height of 11'4" (may vary, depending on rotator used) and a maximum height of 47' including mast. At the towers' retracted height, visual impact is reduced to a minimum and antenna servicing is made easier. Typically the tower and antenna are below the roof line of your home when the tower is fully retracted.

The TMM Series towers are lightweight, freestanding crank-up towers that allow up to 18 square feet of antenna in 50 mph winds per EIA specifications. The TMM-433HD handles 24 square feet. These lightweight towers should provide many years of trouble free service. All of our towers have a hot dipped galvanized finish inside and out.

TX SERIES

US Tower's freestanding TX Series crank-up towers are as strong or stronger than most competitors' heavy-duty models. The TX Series towers have 21 foot sections with 4 foot overlap to provide extra height and strength. In addition, the overlap helps prevent binding while lowering your tower in high wind and conditions.

The TX Series towers have a large enough top section (12 1/2") to permit installation of most rotators inside the section for maximum strength while allowing the section to fully retract. Cross bracing at critical points on the tower ensures safety and additional strength. All US Towers crank-up towers have a heavy-duty, hot dipped galvanized finish both inside and out, which should provide many years of trouble free service.

The TX Series towers come complete with rotator plate and base hardware which includes, large steel anchor bolts and heavy-duty steel T-base that allows the tower to hinge on for easy installation. All T-bases will

The TMM-433SS and 541SS must have the rotator top mounted. The TMM-433HD will accept the Alliance HD-73 and Telex Ham IV inside the tower. Oversized rotators will prevent full retraction of your tower; however, they may be used if full retraction is not required. This restriction is dependent on location of rotator plate. All TMM Series towers include anchor bolts, rotor plate, hinged T-base, load actuated winch, and eight feet of 2" OD x 120" antenna mast.

The TMM-433SS will accept the MD-75 motor drive accessory. The TMM-433HD and 541SS will accept the MD-75 and MDP-750 accessory motor drives. The MDP-750 motor drive accessory is compatible with both of our MCL-100 and RMC-1000 limit switch packages (see accessories).

accept the TRX Series raising fixtures for easy one man installation. All TX Series towers include Fulton hand winches (except MDP and MDPL models) which feature automatic load actuated brakes for maximum safety. Masts and motor drives are available as accessories (see accessory page).

The TX-472MDP comes complete with MDP-750 motor drive and limit switch brackets. The TX-489MDPL includes the MDPL-1000 motor drive and limit switch brackets. Limit switch assemblies and remote raising devices are available (MCL-100) (RMC-1000) for all MDP-750 and MDPL-1000 motor drive units (see accessory page for description).

US Tower's TX Series requires no guying. The wind loading is calculated at 18 square feet of antenna in 50 mph winds per EIA specifications. To assist you in applying for necessary construction permits, Uniform Building Code calculations are available for most models.

HDX SERIES

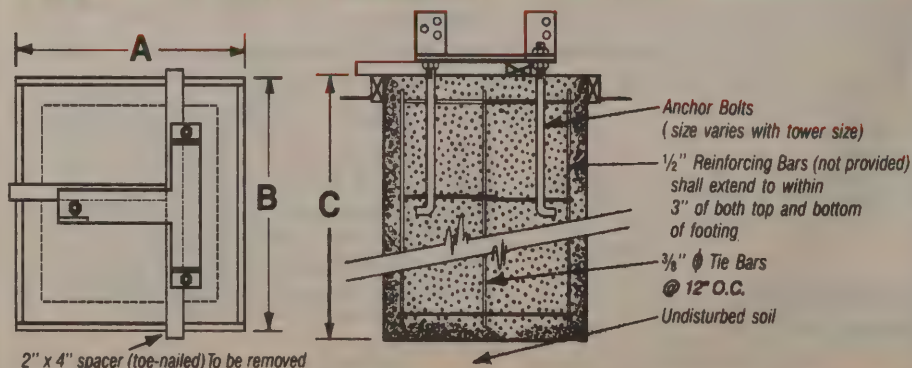
US Tower's HDX Series heavy-duty crank-up towers have up to 2 1/2 times more windloading capacity than others commonly advertised. This superior strength allows for large stacked arrays, while using our commercial type bases and anchor bolts that can be easily installed and vertically adjusted. All HDX Series, T-bases are designed to use our TRX Series raising fixtures to make installations and antenna servicing a one man job.

Modified top sections for the HDR-300 rotators are available at a small additional cost. US Tower carries as accessories many different sizes and strengths of masts which can be used with the HDX Series towers. The HDX-572MDPL and 589MDPL motorized towers provide dual level wind, positive pull down and heavy duty gear box features. The HDX-572MDPL comes only with limit switch brackets. The HDX-589MDPL comes com-

plete with the MCL-100, limit switch package. All towers using MDP-750 and MDPL-1000 motor drives may use the RMC-1000 accessory limit switch package which allows the raising and lowering of your tower from the comfort of your ham shack or any remote location. MCL-100 is also available (see accessory page).

All HDX Series towers come complete with rotator plate, anchor bolts and heavy-duty T-base (doubles as template). US Tower's special T-base design allows the tower to hinge for easy installation. US Tower's crank towers do not require guy wires. The HDX Series towers are rated at 30 square feet of antenna at 50 mph winds per EIA specifications. To assist you in getting a construction permit, Uniform Building Code calculations are available for most towers.

CRANK-UP TOWER BASE INFORMATION



Model	A	B	C
TMM-433SS	3'	3'	4'
TMM-541SS	3'	3'	4'6"
TMM-433HD	3'	3'	5'4"
TX-438	3'	3'	5'
TX-455	3'	3'	6'3"
TX-472	4'	4'	7'
TX-489	4'	4'	8'6"
HDX-538	3'	3'	6'3"
HDX-555	4'	4'	6'6"
HDX-572	4'	4'	8'6"
HDX-589	5'	5'	8'6"
HDX-689	5'	5'	9'6"
HDX-5106	5'	5'	9'6"

SELF-SUPPORTING CRANK-UP TOWERS

Tower Specifications

COMPACT TMM-SERIES CRANK-UP TOWERS

Model Number	Height Maximum	Height Minimum	Sec-tions	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TMM-433SS	33' w/o Mast	11'4"	4	315	10"	18"	\$1,049.95
TMM-433HD	33' w/o Mast	11'4"	4	400	12.5"	20 7/8"	\$1,289.95
TMM-541SS	41' w/o Mast	12'	5	430	10"	20 7/8"	\$1,389.95

All Towers handle 18 sq. ft. antenna at 50 MPH winds. TMM-433HD handles 24 sq. ft.

TX-SERIES FREE-STANDING CRANK-UP TOWERS

Model Number	Height Maximum	Height Minimum	Sec-tions	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
TX-438	38'	21'6"	2	355	12.5"	15"	\$999.95
TX-455	55'	21'	3	670	12.5"	18"	\$1,499.95
TX-472	72'	22'8"	4	1040	12.5"	21 5/8"	\$2,479.95
TX-472MDP	72'	22'8"	4	1210	12.5"	21 5/8"	\$3,999.95
TX-489	89'	23'4"	5	1590	12.5"	25 5/8"	\$4,299.95
TX-489MDPL	89'	23'4"	5	1800	12.5"	25 5/8"	\$6,439.95

All Towers will handle 18 sq. ft. antenna at 50 MPH winds.

HDX-SERIES HEAVY-DUTY CRANK-UP TOWERS

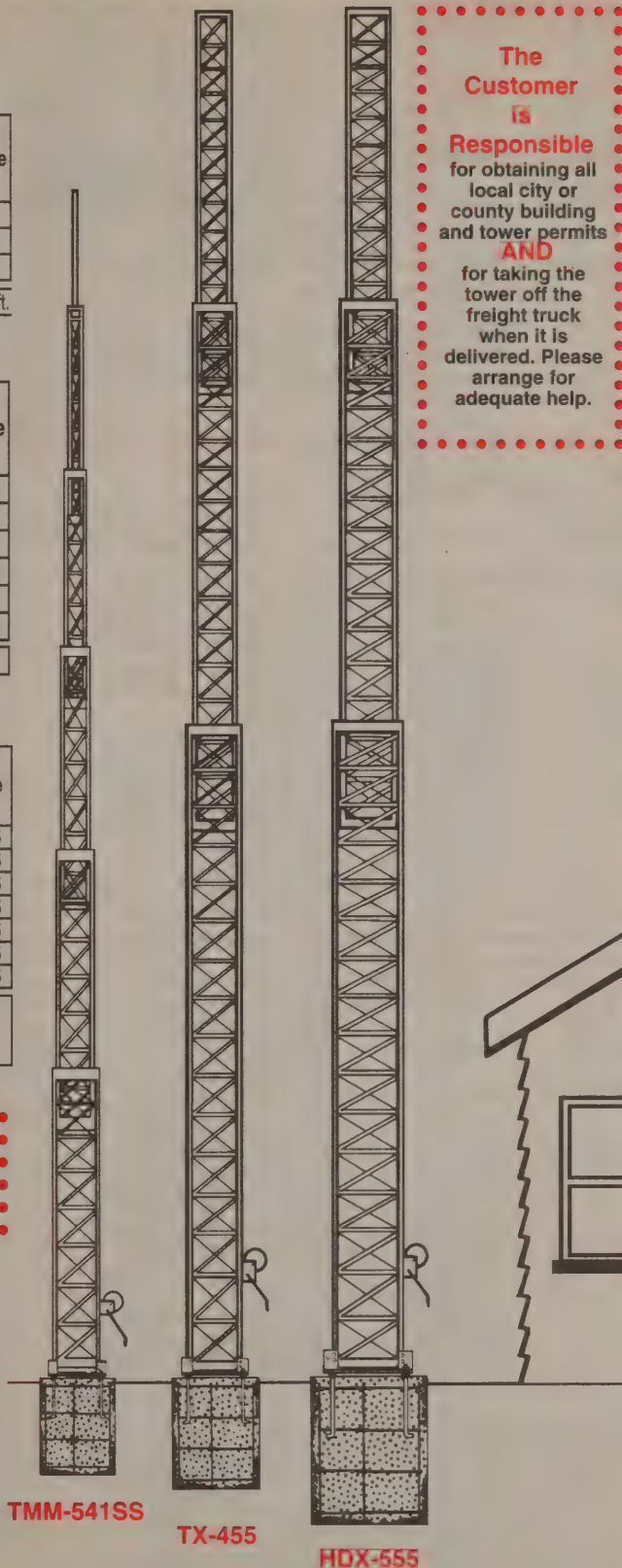
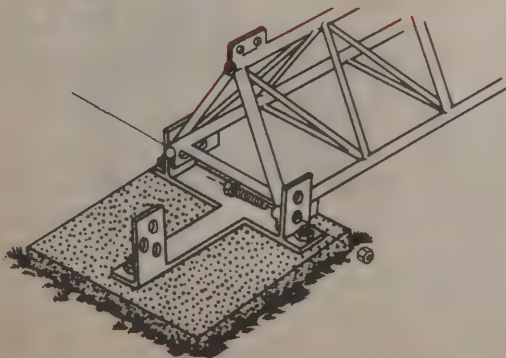
Model Number	Height Maximum	Height Minimum	Sec-tions	Weight Pounds	Sec O.D. Top	Sec O.D. Bottom	HRO Price
HDX-538	38'	21'6"	2	600	15"	18"	\$1,289.95
HDX-555	55'	22'	3	870	15"	21 5/8"	\$2,279.95
HDX-572	72'	22'8"	4	1420	15"	25 5/8"	\$3,869.95
HDX-572MDPL	72'	22'8"	4	1600	15"	25 5/8"	\$5,929.95
HDX-589MDPL	89'	23'8"	5	2440	15"	30 5/8"	\$7,729.95
HDX-689MDPL	89'	23'8"	5	3450	18"	37 1/8"	\$15,029.95
HDX-5106MDPL	106'	24'8"	6	3700	15"	37 1/8"	\$16,649.95

All Towers will handle 30 sq. ft. antenna at 50 MPH winds.

HDX-689MDPL rated at 60 sq. ft. of antenna at 50 mph winds.

HDX-5106MDPL rated at 35 sq. ft. of antenna at 50 mph winds.

**Call Toll-Free for Discounts on
Towers and Accessories**



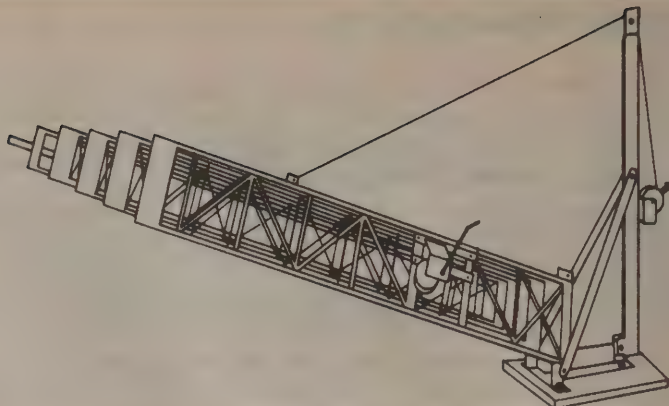
The Customer is Responsible for obtaining all local city or county building and tower permits AND for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.

The factory reserves the right to make changes or modifications without notice.

Raising Fixture

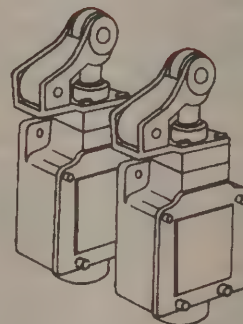
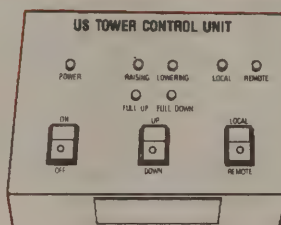
Model	Description	Weight
TRX-80	Standard model tower raising fixture for TMM, TX, and HDX series towers.	120#
TRX-80HD	Heavy-duty model tower raising fixture for TX and HDX series towers.	155#

Both TRX-80 and 80HD are designed to be easily mounted on your tower's hinged T-base for quick and safe one-man installation or antenna servicing.



Remote Control

Model	Description	Weight
RMC-1000	Relay operated remote control for raising and lowering your tower from your ham shack or other remote location. The RMC-1000 includes limit switches, limit switch brackets, and two relay boxes. The RMC-1000 can only be used with the MDP-750 and MDPL-1000 motor drives.	18#
MCL-100	Limit switch control package. The MCL-100 includes limit switches, limit switch brackets and control box at the base of the tower. The MCL-100 allows you to raise and lower your tower with automatic shut down when maximum or minimum height is reached. The MCL-100 can only be used with the MDP-750 and MDLP-1000 motor drives.	7#

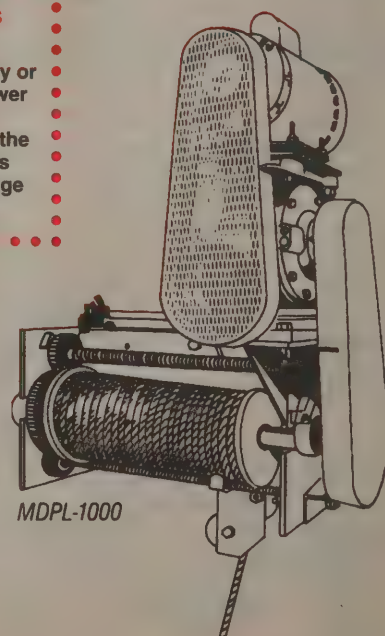


Motor Drives

Model	Description	Weight
MD-75	Heavy-duty motor drive with 1 HP motor and gear box.	155#
MDP-750	Heavy-duty motor drive with 1 HP motor, gear box and positive pull down. US Tower's positive pull down feature is designed to mechanically apply the same strength in the retraction process as is used in the raising of your tower. Positive pull down is very important in lowering your tower in high wind conditions. The MDP-750 differs from the standard motor drive (MD-75) unit which releases tension on the cables allowing the weight of the upper sections to be the only lowering force.	185#
MDLP-1000	Heavy-duty motor drive with 1 HP motor, heavy duty gear box, positive pull down and dual level wind features. Dual level wind is an exclusive US Tower design allowing the cable to wind on the motor drum in a uniform manner. This prevents the cable from overlapping on the drum. For description of positive pull down see MDP-750.	220#

The Customer is Responsible
for obtaining all local city or county building and tower permits **AND** for taking the tower off the freight truck when it is delivered. Please arrange for adequate help.

Call factory for replacement 1 HP motors, handwinches, limit switches, 3/16" x 7" x 19" and 1/4" x 7" x 19" aircraft cable, anchor bolts, belts, pulleys, sprockets, and modified bases. Tower dolly rentals are available. The factory reserves the right to make changes or modifications without notice.



CRANK-UP ACCESSORIES

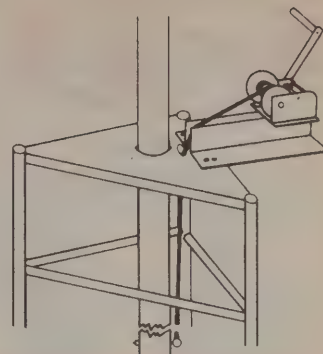
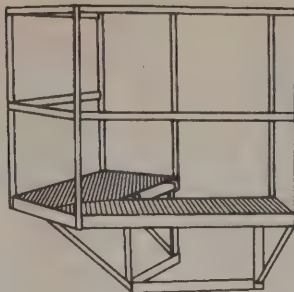
Model **Description** **Weight**

Service Platform

HDP Large service platform with safety railings to provide a safe and comfortable surface while installing or maintaining your antenna and rotator. 125#

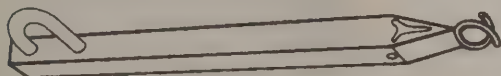
Mast Raising Fixture

MRF Mast raising fixture with winch and cable that attaches to the top of your tower to assist in raising and lowering your antenna mast. 20#



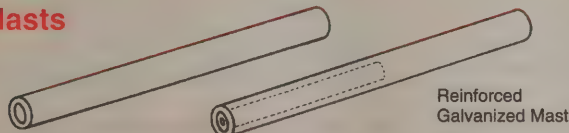
Coaxial Arm Sets

IV-16 The IV-16 slips over the top of the mast and rests at the top of the tower to hold inverted vee antennas. The IV-16 cannot be used with MARB rotator base. 5#



CX-2 Set of 2 coax standoff arms 6#
CX-3 Set of 3 coax standoff arms 8#
CX-4 Set of 4 coax standoff arms 10#
CX-5 Set of 5 coax standoff arms 13#

Masts



US Tower offers two different types of masts. The M-5, 10, 15 and 20 masts have .120" wall thickness. The M-15R and 20R have steel pipe inserts in the lower half of the mast which provides extra strength where most needed without adding unnecessary weight in the top portion. The M-15R and 20R have a wall thickness of .250".

Model	Description	Weight
M-5	2" O.D. x 5 foot galvanized mast	14#
M-10	2" O.D. x 10 foot galvanized mast	25#
M-15	2" O.D. x 15 foot galvanized mast	40#
M-15R	2" O.D. x 15 foot reinforced galvanized mast	50#
M-20	2" O.D. x 20 foot galvanized mast	55#
M-20R	2" O.D. x 20 foot reinforced galvanized mast	70#
CM-20	2" O.D. x 20 foot .375 wall thickness chromemolloy steel	130#

3/4" x 27"	Anchor bolt with 2 nuts	5#
1" x 36"	Anchor bolt with 2 nuts	10#
1-1/8" x 27"	Anchor bolt with 2 nuts	12#
RP-3	Rotator plate for 10" section	5#
RP-4	Rotator plate for 12.5" section	7#
RP-5	Rotator plate for 15" section	9#

Thrust Bearing



TB-2US Thrust Bearing for 2" mast, 2 flange holes 10#

Tower Accessories

	TX-438	TX-455	TX-472	TX-472MDP	TX-489	TX-489MDPL	HDX-538	HDX-555	HDX-572	HDX-572MDPL	HDX-588MDPL	TMM-433SS	TMM-433HD	TMM-541SS	HRO Price
MASTS															
M-5	O	O	O	O	O	O	O	O	O	O	O	O	O	O	\$36.00
M-8												S	S	S	CALL
M-10	O	O	O	O	O	O	O	O	O	O	O	O	O	O	\$69.95
M-15	O	O	O	O	O	O	O	O	O	O	O	O	O	O	\$92.95
M-20	O	O	O	O	O	O	O	O	O	O	O				\$129.95
M-15R	O	O	O	O	O	O	O	O	O	O	O				\$139.95
M-20R	O	O	O	O	O	O	O	O	O	O	O				\$189.95
CM-20	O	O	O	O	O	O	O	O	O	O	O				\$389.95
RAISING FIXTURE															
TRX-80	O	O					O	O				O	O	O	\$389.95
TRX-80HD			O	O	O	O			O	O	O				\$499.95
SERVICE PLATFORM															
HDP			O	O	O	O			O	O	O				\$669.95
COAX STANOFF ARMS															
CX-2	O						O								\$49.95
CX-3		O						O							\$69.95
CX-4			O	O					O	O		O	O		\$99.95
CX-5					O	O					O			O	\$139.95
MOTOR DRIVES															
MD-75	O	O					O	O				O	O	O	\$889.95
MDP-750		O	O	S				O				O	O		\$1389.95
MDPL-1000			O	O	S				O	S					\$1879.95
REMOTE CONTROL															
RMC-1000		O	O	O	O	O		O	O	O	O		O	O	\$889.95
MCL-100		O	O	O	O	S		O	O	S	S		O	O	\$379.95
MISCELLANEOUS															
3/4" X 27" bolts	S											S	S	S	\$21.95
1" X 36" bolts	S			S	S		S	S	S						\$28.95
1-1/8" X 36" bolts		S	S				S		S						\$37.95
RP-3												S	S		\$19.95
RP-4	S	S	S	S	S	S						S			\$26.95
RP-5							S	S	S	S	S				\$32.95
MRF	O	O	O	O	O	O	O	O	O	O	O		O		\$249.95
TB-2US	O	O	O	O	O	O	O	O	O	O	O		O		\$98.95
IV-16	O	O	O	O	O	O	O	O	O	O	O		O	O	\$37.95

S - Standard
O - Optional

TOWERS

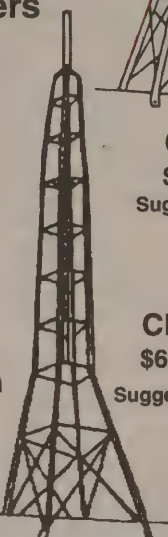


Roof Towers



CR-30
\$549.95

Suggested List



CR-45
\$649.95
Suggested List



CR-18
\$319.95
Suggested List

Create Roof Towers are constructed of high grade aluminum with galvanized steel bracing for added stability and strength. The towers will easily accommodate your antenna requirements. The three sizes will support VHF antennas, HF tri-banders and OSCAR systems.

Rotators easily mount inside the tower. An optional thrust bearing (Model #CK46) is recommended. Guying is required on all roof towers. Maximum mast size is 2.5".

Model	Height	Max Antenna Wind Load in FT2	Base Width	Max Vertical Load in lbs.	Tower Weight in lbs.
CR-18	5'10"	21 @ 90 MPH	31 1/3"	440	18
CR-30	9'10"	27 @ 90 MPH	39"	1322	33
CR-45	14'9"	23 @ 90 MPH	39"	881	57



25G & Accessories

- 25G** 10' tower section.
- 25AG2** Top section for use with communication antenna. Mast support tube is 2 1/4" O.D., 36" total length, extending 18" above apex of side rails.
- 25AG4** 8' top section for communication antenna. Upper end terminates in 11" diameter flat, circular plate with a 2 1/4" hole in center.
- AS25G** Accessory shelf.
- GA25GD** Guy assembly
- SB25G** 3/4" short base section for concrete.
- SBH25G** 3/4" hinged short base section for concrete.
- BPC25G** Concrete base plate.
- BPH25G** Hinged base plate for concrete.
- HB25AG** Adjustable house bracket (0-15")
- HB25BG** Adjustable house bracket (0-24")
- HB25CG** Adjustable house bracket (0-36")
- HBH** Universal house bracket (6-30").
- TB3** Heavy-duty thrust bearing is recommended for 2" O.D. mast.
- WP25G** Work platform.
- EF2545** Aluminum erection fixture.

Other accessories available. Call.

Weather Stations



ULTIMETER II

The Ultimeter II provides data for SKYWARN and A.R.E.S. and is fully compatible with the Automatic Packet Reporting System. It includes an all-digital wind sensor that clamps to a mast without hardware. Features unique point-and-plug direction calibration. An alarm tells you to crank down your tower when high winds threaten. More than 20 weather functions are provided. (Some functions require optional features.)
HRO Price \$199.95

Options:

Rain Gauge \$60.00
Additional keyboard / display \$69.00
Data Logger for PC \$69.00
RFI filter \$17.00
Static Electricity Discharge Unit \$17.00

ULTIMETER

The Ultimeter 2000 delivers more than 100 weather readings yet it is simple to use. Each key is labeled with an icon that indicates its function. Provides wind speed, barometric pressure, temperature, humidity and rain (optional) information. Gives current data as well as today's, yesterday's and long term highs and lows. I/O port for computer connectivity. **HRO Price \$379.95**

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Six toll-free 800 numbers are available for orders. They are located throughout the United States. This provides personnel at one location or another to answer your questions for extended hours Monday through Saturday. You will find the same low prices at all locations and, thanks to computers, we have the stock levels of all locations available to each salesperson for estimates of availability and delivery.

24 Hour "On-Line" Ordering is now available on the INTERNET! URL is <http://www.hamradio.com>

Shipments are made from any of our 12 locations that has the particular items you need in stock. In most cases, the shipment will be made from the location nearest you (if stock is available). HRO is trying to provide the quickest shipments in the industry using these methods.

California customers can now order using a toll-free number. The number is 1-800-854-6046. It is no longer necessary for California customers to pay for the phone call.

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State and local laws require us to collect and remit State sales / use tax on orders shipped from any of our 12 locations INTO Arizona, California, Colorado, Georgia, or Virginia.

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To place a phone order using a credit card, please have the following information available if you are a first-time caller or have not made a recent purchase from HRO. We will ask for your call sign (if any), credit card number, expiration date, your home telephone number, and possibly the name, address, and telephone number of the bank listed on your charge card statement.

Payment

We accept Visa, MasterCard and Discover Card. Personal checks are also accepted; however, processing time will delay shipment by some 10 days. When using a credit card, please have the card in front of you since we will need all the information, including the name of the issuing bank. If the card holder's BILLING address differs from the shipping address, please be sure to specify both addresses and telephone numbers. For your protection, we thoroughly investigate the validity of all credit card purchases.

COD Orders

COD payments must be made in cash, cashiers check, or money order at the time of delivery. There is a small fee for COD shipments.

Commercial Sales Purchase Orders

Written purchase orders will be accepted from city, state, and federal agencies, and, with prior approval of credit, from commercial organizations. HRO quotes, in most cases, prices that require payment on receipt of merchandise. You may find a surcharge for credit terms applied to your pricing. Please indicate that you require terms when calling for price quotes.

Delivery

All Alaska and Hawaii shipments via UPS must be shipped by Blue Label (2nd Day Air) or Red Label (Overnight). Please ask for charges.

In a Hurry? If you find it necessary to expedite shipments, UPS has Red Label (overnight), Blue Label (2nd-day) and Orange Label (3 day) services available at an extra cost. Please request charges for these services.

Foreign Deliveries We ship world-wide. Contact our stores, preferably by fax, with your needs. We can give you quotes and details for placing your foreign order. Payment methods include wire transfer direct to our bank as well as payment by VISA/ MC charge cards or check drawn in U.S. Funds from a U.S. Bank. Shipments are made (depending on size) by UPS, FED EX, Emery, DHL, or international air mail. Some orders to some foreign countries cannot be insured to the full value.

Truck Delivery On day of delivery, if by truck, please be sure to have enough help, and / or proper equipment on hand for unloading merchandise. Truck drivers are NOT required to provide assistance. If you are not experienced at handling large, awkward items such as towers, antennas or amplifiers, please ask properly trained people to assist you.

Canadian Orders can now be shipped via UPS. These costs will be added to your invoice.

Damaged Items

UPS If the item is obviously damaged, note this with the driver and refuse shipment. This item will be returned to HRO and another will be sent at no additional charge. If hidden damage is noted, contact UPS as soon as possible. They will arrange pickup. Once the item is received by HRO, a replacement will be sent.

TRUCK If there is damage or the shipment is short, it is the customer's responsibility to file the claim with the trucking company. At the time of receipt of item, it is recommended that you have the driver write "damaged" or indicate shortage on the bill of lading he gives to you. Be sure to have the same notation as well as driver's signature on his copy also.

MAIL It is the customer's responsibility to file all loss or damage claims with the postal department.

Prices

Many prices shown are suggested list price. In most cases we offer large discounts. Equipment manufacturers constantly change prices, offer specials or react to the Dollar / Yen exchange rates. Simply call one of our 800 numbers and our staff will be happy to quote you the current selling price of the item you are interested in. Prices are subject to change without notice or obligation to the customer. Sorry, we cannot honor typos in this catalog.

Software

Software is sold on a non-returnable basis. Any software problems will be resolved under the terms of the manufacturer's warranty.

Lost Items

When your order is delivered, please carefully count items and if anything is missing, notify HRO at once.

Occasionally, cartons shipped at the same time will arrive at their destination two or three days apart.

If you notify HRO within 10 days, we will replace lost or damaged items after completion of proper documentation and acceptance by the shipping agency.

New Equipment Returns

Products are not sold for evaluation. Under some circumstances (at the discretion of HRO) and with prior approval of the store of purchase, HRO will accept an item for return. Under most circumstances a 15% restocking fee and all freight charges will be assessed.

Your means of refund for returns will be the same as that used for your original payment except for cash, which will be refunded by check. HRO will pay from its corporate offices. It can take up to two weeks.

Defective merchandise may be returned within 10 days of the original purchase for exchange. Original receipt must accompany the return. Items returned for warranty replacement consideration must also include a completed, signed, "Warranty Replacement Certification Form." Customers who return equipment for replacement consideration without this form completed and signed cannot be considered for any possible warranty replacement, only warranty repair. No exceptions. Contact your salesman for details.

Manufacturer's New Equipment Warranties

Ham Radio Outlet supports all manufacturers' warranties. Actual warranty terms are included within the shipping container of most items. If needed, you may request from any of our locations a free copy of the manufacturer's written terms for any warranted product. Please request by model number and indicate the page in this catalog that represents the product.

Ham Radio Outlet will in many cases provide in-store repairs; please contact the store of purchase for information. It will be necessary to provide us with the invoice number and purchase date, as most manufacturers need this information to process under their FREE warranty repair terms.

New Equipment Warranty Returns

When returning equipment for repair, please pack the item in original packing material or something similar to provide adequate protection during the shipping process. Note on box: "ATTENTION SERVICE." Include a copy of your purchase invoice, and a complete and detailed description of the problems. Without the invoice or a complete description, delays will be experienced in providing the proper service and returning the item to you. Be sure to insure the package for its replacement cost.

HRO will repair or replace the defective item at our option. If the item is found to be defective under the terms of the manufacturer's warranty, no charge will be made for service or return shipping within continental USA. It is the customer's responsibility to ship all defective items to the service center for warranty repair.

Problems

HRO prides itself in its ability to service the customer. If there is a problem please contact the manager of the store from which you purchased the merchandise. If for some reason, your problem cannot be corrected by that store manager, please feel free to call Ham Radio Outlet Corporate Headquarters at (510) 831-1771 and explain the situation. At this point our national sales staff will see that your problem is corrected.

Thank You for choosing

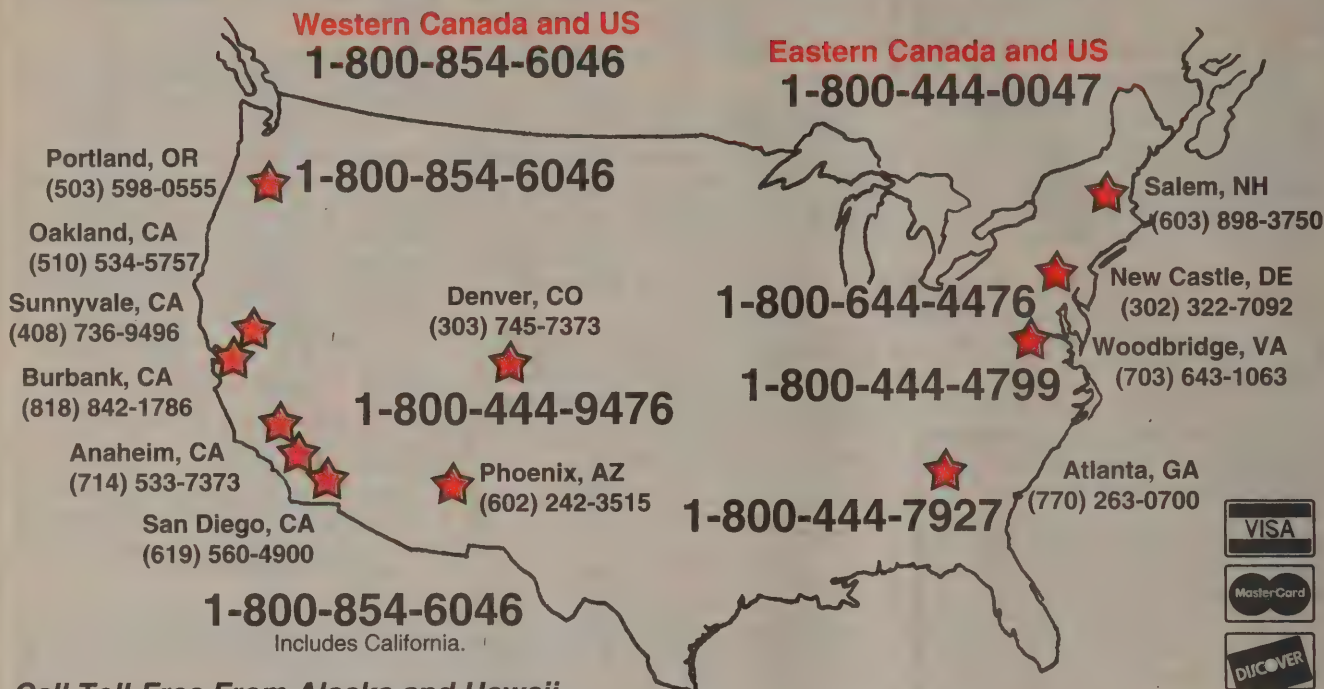


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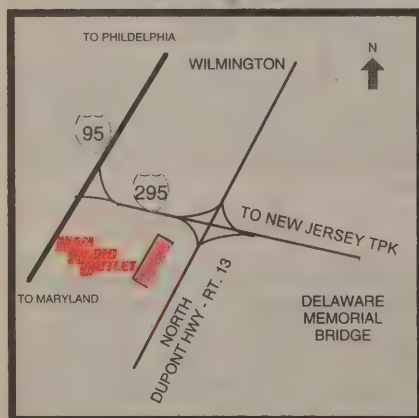
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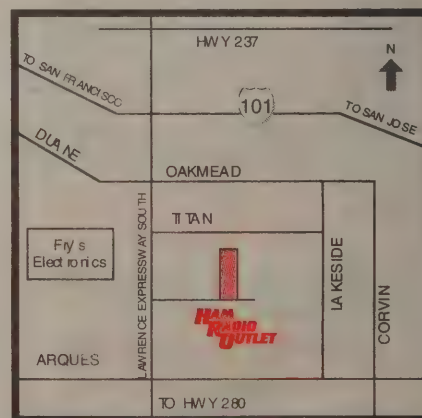
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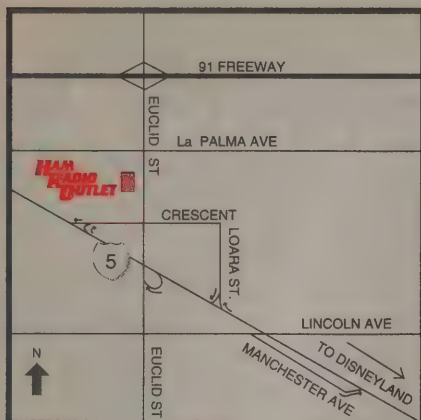
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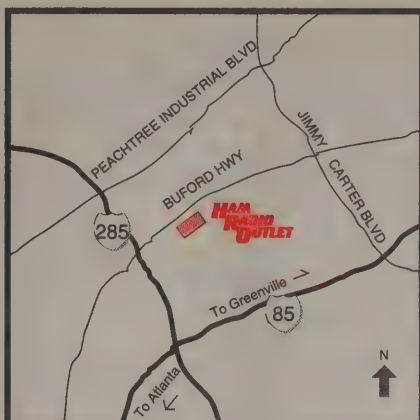
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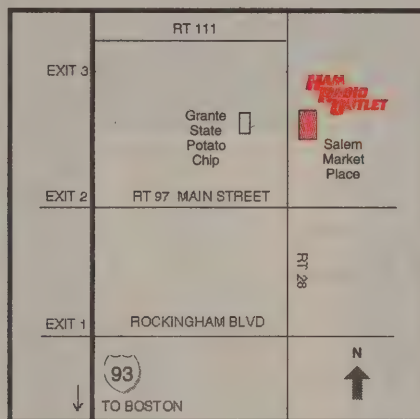
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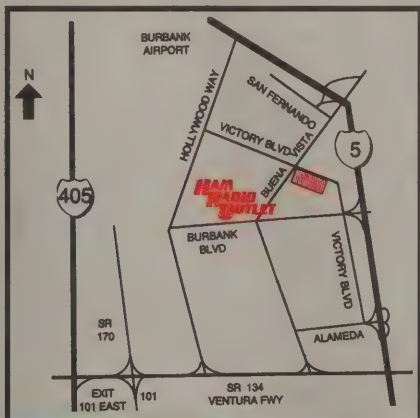
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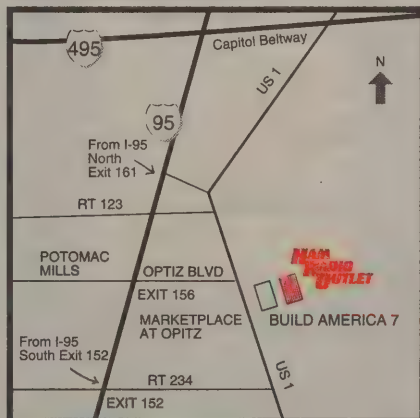
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NEW

Compact Dual Band Mobile

FT-8000R

Now, a dual band that's so advanced it's simple!



"So easy to operate, I didn't even need the manual!"

"High-tech features, too, like the enhanced Smart-Search™."



"Advanced performance, and simple to use. I knew Yaesu would be first with this."

"Yaesu did it again!"

Continuing Yaesu's leading edge engineering philosophy, the FT-8000R Compact Dual Band Mobile introduces industry-first features and no-nonsense operation for today's demanding Amateur. No puzzling key combinations on the FT-8000R; eight clearly marked keys and Yaesu's exclusive Omni-Glow™ display make operation a snap. Want to change bands? Just push the VHF or UHF Volume control!

The FT-8000R is the first mobile to provide superwide receiver coverage – from 110 to 550 MHz and 750 to 1300 MHz*, receiving public safety, marine, and weather channels. Using Yaesu's exclusive Enhanced Smart Search™, the FT-8000R automatically seeks out and loads active simplex channels into up to 50 ESS memory channels in just seconds – ideal when traveling.

Built-to-last, the FT-8000R brings together the most-requested dual band features and a MIL-STD 810 rating for enduring performance. Dual receive (V+V, U+U or V+U), Crossband Repeat (bidirectional or one-way), up to 50 Watts of VHF power output (35 Watts on UHF) with High/Medium/Low selection on each band, and "plug and play" 1200 or 9600 bps packet are just a few.

Clearly a standout, the FT-8000R boasts 110 memory channels (55 per band including

one-touch "Home" channels) that store repeater shift, CTCSS encode tone, and packet baud rate. Other essential features include a backlit microphone (another Yaesu first), Time-Out Timer, and an all-new S-Meter Squelch that opens based on the S-meter reading. And, for a programming alternative, the optional ADMS-2C Personal Computer Programming Kit simplifies operation even more.

The FT-8000R dual band mobile is easy to operate -- and one of the most affordable radios on the market. Bring its high-tech performance home with you today! Available at your Yaesu dealer now!

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Features

- Frequency Coverage
RX: 110–550 MHz
750–1300 MHz*
TX: 144–148 MHz
430–450 MHz
- 3 Power Output Levels
2m 50/10/5 Watt
70cm 35/10/5 Watt
- 110 Memory Channels (55 per band, including "Home" channels)
- Enhanced Smart Search™
- CTCSS Encode
- Time-Out Timer (TOT)
- S-Meter Squelch
- Dual Receive (V+V, U+U or V+U)
- Crossband Repeat (bidirectional or one-way)
- PC Programmable w/optional ADMS-2C
- Intelligent Band Display (IBD)
- Receiver Muting
- Auto Power Off (APO)
- MIL-STD 810 Rating
- Omni-Glow™ Display
- 1200/9600 bps Packet Compatible
- Alternating-Band Memory Selection (ABMS)
- DTMF Autodialer (one memory per band)
- Accessories

Consult your local Yaesu dealer.

*Cellular blocked.

FT-8500

Dual Band Mobile

Detachable remote front panel, Alphanumeric Display, Spectra-Analyzer™, Digital Voltage Display, 110 memories in 5 banks, choice of microphones, offers high performance operating flexibility.



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Weller	74
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Yaesu	26-35, 43, 65, 76, 79-81, 100, 104

Ultra Compact Dual Band Handheld **FT-50R**

One tough little dual bander!

Features

- Frequency Coverage
Wide Band Receive
RX: 76-200 MHz, 300-540 MHz, 590-999 MHz*
TX: 144-148 MHz, 430-450 MHz
- AM Aircraft Receive
- MIL-STD 810 Rating
- Digital Coded Squelch (DCS)
- 112 Memory Channels
- 12V DC Direct Input
- High Speed Scanning
- Alphanumeric Display
- CTCSS Encode (Decode w/FTT-12)
- Auto Range Transpond System™ (ARTS™)
- Dual Watch
- Direct FM
- High Audio Output
- ADMS-1C Windows™ Programmable
- Four Battery Savers:
Automatic Power-Off (APO)
Receive Battery Saver (RBS)
Selectable Power Output (SPO)
Transmit Battery Saver (TBS)
- Time Out Timer (TOT)
- 2.5 and 5 Watt Versions Available
- Optional Digital Voice Recording System (DVRS)
- Full line of accessories



Battery Voltage displays current operating battery voltage. Digital Coded Squelch (DCS) silently monitors busy channels. Auto Range Transpond System™ (ARTS™) uses DCS to allow two radios to track one another. And, the FT-50R is ADMS-1C Windows™ PC programming compatible, too. To round out the FT-50R, it has four battery savers, and super loud audio—remarkable in an HT this size.

A reliable companion where ever you go, the FT-50R is one tough little dual bander with all the features you want!

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"You notice how loud this HT's audio is?"

"Yeah, it's Mil Spec tough like a commercial HT."

"Easy to operate, small, great price!"

"Yaesu did it again!"



FT-10/40R
Ultra Compact Handhelds
VHF or UHF. Similar to FT-50R including MIL-STD 810, and other exclusive features.

EDSP
RX/TX

All-Mode HF Transceiver **FT-1000MP**



The year was 1956. Electronic communication throughout the world was on the threshold of significant and remarkable change. Intrigued by the development of single-sideband radio theory, a young engineer and amateur radio experimenter painstakingly assembled an SSB transmitter. Word of his successful efforts spread quickly among his friends, and soon radio amateurs from all over the country were requesting transmitters just like it. Thus was born the first invention of JA1MP, founder of Yaesu. Though his key is now silent, in tribute to his leadership and exceptional contributions to the radio art, the FT-1000MP carries the memory of his call sign.

An HF Masterpiece, Combining the Best of Digital and RF design technology. The FT-1000MP.



Specifications

- EDSP (Enhanced Digital Signal Processing)
- Shuttle-jog Rapid Tuning Enhancement
- Directional Tuning Scale for CW/Digital mode and clarifier offset display
- Dual In-Band Receive w/ Separate S-Meters
- Selectable Antenna Jacks
- Collins SSB Mechanical Filter built-in, 500 Hz CW Collins filter plug-in, optional
- Selectable Cascaded Crystal and Mechanical IF Filtering (2nd and 3rd IF Filters)
- User-programmable Tuning Steps w/0.625 Hz High Resolution Low-Noise DDS Circuit
- Custom Feature Set-up via New Menu System
- Adjustable TX Output Power: 5-100W (5-25W AM)
- True Base Station: Both 100-117 or 200-234± VAC 10%, 50/60 Hz and 13.5 VDC Power Inputs

Blending digital and RF technology, the FT-1000MP features a Yaesu exclusive: Enhanced Digital Signal Processing (EDSP). Beginning on the receive side with Yaesu's industry-standard high-intercept front end design, the RF signal is then fed to the IF stages, where an impressive array of 8.2 MHz and 455 kHz IF filters (including a built-in Collins SSB Mechanical Filter) establish the tight shape factor so important in obtaining high dynamic range and low noise figure. Finally, the EDSP system provides specially-designed filter selections and response contours for maximum intelligence recovery.

Only with this combination of EDSP, independently selectable 8.2 MHz and 455 kHz IF filters, and a low-noise DDS local oscillator system can receiver performance without compromise be obtained. You can customize your FT-1000MP by choosing from 2.0 kHz, 500 Hz, and 250 Hz optional, cascaded IF filters, then zero in on weak signals using Yaesu's exclusive Shuttle-jog Rapid Tuning Enhancement and high-resolution (0.625 Hz) DDS VFO. Without question, the FT-1000MP is the most technologically advanced HF rig today.

EDSP operates in both transmit and receive modes. On receive, the EDSP produces enhanced signal-to-noise ratio and significantly improved intelligence recovery during difficult situations involving noise and/or interference. The result of hundreds of hours of laboratory and real-world experimentation, EDSP's 4 preset random noise reduction protocols and 4 digital filtering selections are controlled by easy-to-use concentric controls on the front panel of the transceiver. High, low, and mid-range cuts for voice work are teamed with razor-sharp CW bandpass filters and an automatic notch filter which identifies and attenuates undesired carriers or heterodynes. Also operational in the transmit mode, EDSP provides 4 performance-enhancement pattern selections for different operating circumstances, ensuring best readability of your signal on the other end of the path.

Once again, Yaesu's engineers have reaffirmed the vision and dedication of JA1MP which began nearly 40 years ago. See the incomparable FT-1000MP today.

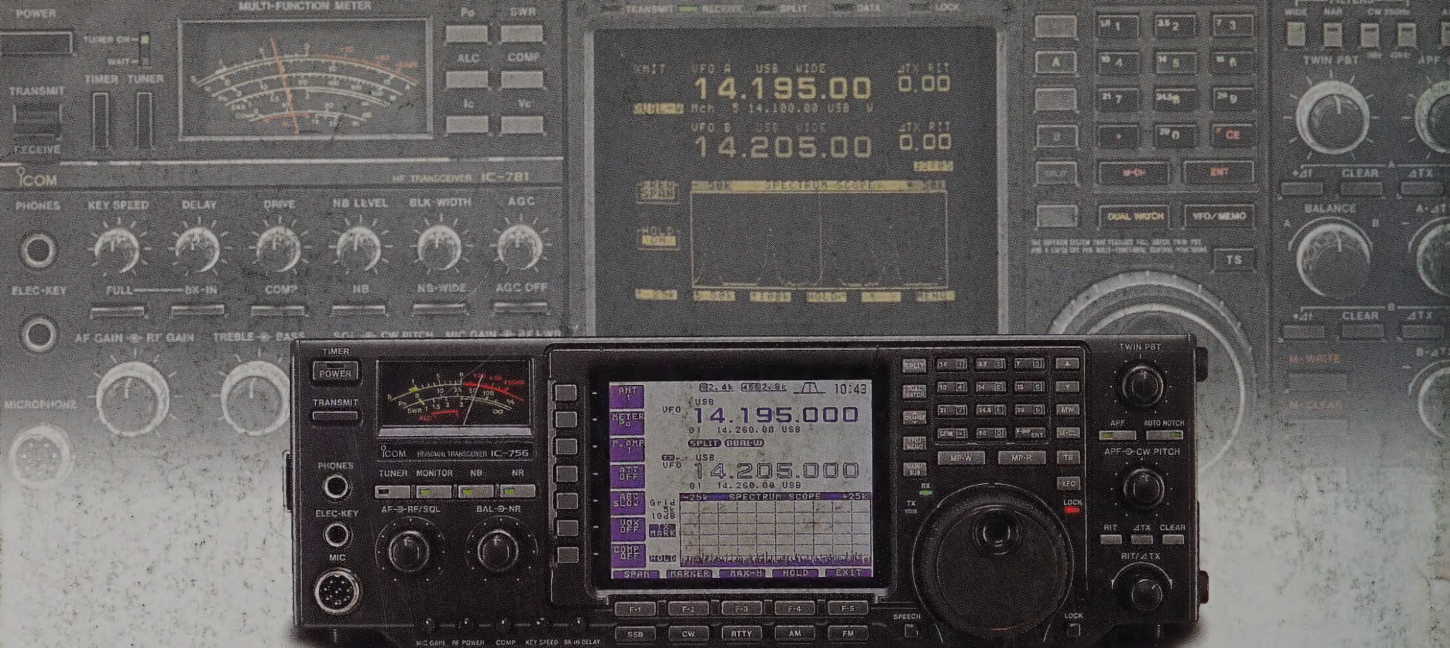
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All Mode HF Transceiver
"The Dream Station"



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Introducing ICOM's IC-756

Advanced features and performance, in the spirit of the IC-781.
But at a real down-to-Earth price.

- Operate HF and 6 meters!
- All new adjustable IF-DSP on transmit and receive
- 4.9" Concentrated Information LCD Display with dot matrix characters
- View alphanumeric memory channel names, spectrum scope, soft key buttons, set mode condition list, and more!
- 100 W stable output power (40 W on AM)
- SSB/AM/FM/CW/RTTY
- Automatic antenna tuner
- Dual watch
- Twin pass band tuning
- 101 memory channels
- New high-performance memory keyer
- 12 volt operation
- IF notch filter
- Level/width noise blanker
- Speech synthesizer
- Selectable audio peak filter
- Phase Shift Network (PSN) modulation/demodulation
- PC programmable
- CW announcements to aid the visually impaired

And much, much more!

Turn to page 8 in this HRO catalog
for more information!

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